

SELF-DETERMINATION IN MEDICAL SCHOOL: MEDICAL STUDENTS'
PERSPECTIVES

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ABSTRACT

Medical students enter medical school with varied backgrounds and learning expectations. Tensions arise between medical students' expectations and expectations of the teachers and program, which impacts motivation. In self-determination theory people are motivated by satisfaction of three psychological needs: *autonomy, competence, and relatedness*, which enhance self-determination, but when hindered decrease motivation and well-being.

The purpose of this study was to explore medical students' perspectives of their self-determination during medical school by exploring medical students' perspectives of autonomy-supportiveness, competence-supportiveness, and relatedness with their teachers in their medical education program, and the impact on their learning.

I used mixed methods design with two phases. In Phase I, medical students from a single institution completed three surveys all derived from self-determination theory, which investigated causality orientation, autonomy-supportiveness of teachers, and motivation to engage in learning. In Phase II, two World Café events were held at two sites. Medical students' discussed their perspectives of autonomy, competence, and relatedness in their medical education. I used deductive content analysis to organize the findings into themes.

In Phase I, 178 students responded (57% female). Survey scores were compared by gender, year in program, years of university before medical school, and distributed program site. The results indicated that medical students were autonomously oriented. Females were more autonomy-oriented than males, and engaged in learning for more autonomous reasons. Students in the distributed site perceived their teachers to be less autonomy supportive.

In Phase II, 64 students attended two World Café events. Themes were categorized according to psychological need. The students identified several teacher actions and curricular

structures that supported and hindered their self-determination. The themes across distributed sites were consistent; however, students in the distributed site perceived lower autonomy and less relatedness with their teachers.

This study used qualitative methods to explore students' perspectives of self-determination, which is unique to the self-determination literature. Educators often emphasize teaching methods to maximize cognitive and motivational outcomes. However, medical students emphasized specific teacher actions and curricular supports as most important for establishing the motivational context for learning. This research will help medical teachers to intentionally create appropriate motivational contexts for learners.

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CHAPTER 1: INTRODUCTION

Medical students come to medical school with varied backgrounds, and each of these backgrounds is characterized by a certain idea and expectation for what the students will learn, what is important to learn, and what the overall learning experience will be like. Medical students have typically demonstrated through the application process for medicine that they are highly motivated and academically successful individuals. Furthermore, medical students face many tensions throughout their medical education experience. These tensions relate to the content that is taught, the strategies that teachers use to teach that content, the perceived confidence that students have about their competence in their knowledge and skills, and their relationships and social interactions with classmates and faculty. These tensions arise when learner expectations and personal goals and values do not align with national and college specific goals and objectives, teaching practices, and existing social and organizational structures. These tensions have an impact on learner motivation.

In an attempt to engage learners and nurture motivation, teachers utilize various teaching strategies and make considerable efforts to demonstrate the importance of the content they are teaching. In order to be effective in motivating students, medical educators must facilitate the integration of college and national medical education goals and objectives with the self-determined personal values and interests of students (Ryan & Deci, 2000). College-stated and national objectives are extrinsic regulators of behaviour, but they are also concordant with and integrated into the self-determined values of the medical students. Therefore, this combination leads to a higher quality, more autonomously derived form of motivation. When extrinsic regulators of behaviour are discordant with students' self-determined values, a more controlled and lower quality form of extrinsic motivation arises. With a more autonomous form of

motivation students learn better, have a deep approach to learning, experience greater personal growth, and have a greater sense of well-being. With more controlled motivation students typically have a more superficial approach to learning and experience more distress (Reeve, 2002). These principles are central to Self-Determination Theory, a motivational theory proposed primarily through the work of Deci and Ryan (2002).

Self-Determination Theory researchers suggest that human beings are motivated by three psychological needs (autonomy, competence, and relatedness) which when satisfied, yield enhanced self-motivation and mental health, but when hindered lead to reduced motivation and well-being (Ryan & Deci, 2002). Ryan and Deci proposed that motivation operates on a continuum ranging from amotivation to extrinsic motivation to intrinsic motivation. Extrinsic motivation is itself on a continuum ranging from a highly externally regulated form of motivation (e.g., carrot and stick) to a highly internally regulated form of motivation. In internally regulated extrinsic motivation, individuals engage in activities that initially arise from an external prompt; however, because these activities are congruent with individuals' goals and values, they endorse the activities as internally self-determined.

Intrinsic motivation is the most autonomous form of motivation and the prototype of self-determined behaviour. The more that an externally regulated action or task matches an individual's internal values, the more he or she will be autonomously motivated to engage in that task in a complete and meaningful way. The effect is deeper learning, better personal development, and greater well-being (Ryan and Deci, 2002).

Motivation is a contextual phenomenon. One may find an activity to be inherently interesting or of personal value, and experience autonomous (i.e., self-determined) motivation for that activity. For example, medical students are typically highly intrinsically motivated to

pursue medicine as a career. However, there may be specific activities within that larger context that are not inherently interesting to the individual, which become less motivating.

For example, perhaps a keen medical student does not find learning physics or embryology to be interesting or valuable for a physician-to-be. However, she may still engage in the activity because she knows that it is required for her to complete her medical degree. She is motivated, but the motivation does not come from within; rather, the source of the motivation is externally regulated. She has little choice; in fact, she is compelled to take such courses. In this situation, she engages, but only to the extent that her engagement will allow her to achieve her goal of becoming a physician. The likely result is that her learning in these particular subject areas will be superficial and she will experience limited personal growth from the experience. In other words, she will not benefit academically or personally from this experience to the same extent as someone who is acting more autonomously, by selecting courses for personal interest.

Externally regulated forms of motivation are common in the context of education, including medical education. When programs are designed, they are constructed in a way to allow students to build their knowledge and understanding of the discipline in a developmental way. During this developmental process, students may not see the immediate relevance of certain courses or topics being taught, yet they must take these courses in order to accomplish their goal. The extent of medical students' autonomous motivation is determined by the degree to which their interest in the course, the content presented in the course, and how the course content is presented aligns with their personal values. A logical question then becomes, to what extent are medical students autonomously motivated during their medical education?

Background

My interest in this topic has a long history. Before entering Medicine, I obtained an undergraduate degree in Anatomy and Cell Biology. I chose this path because I was interested in the basic sciences, particularly anatomy. In these courses professors made little or only occasional reference to clinical medicine; however, even at that stage I believed these topics were essential as a background for medicine, and assumed that they would be necessary knowledge for every physician in medical practice. I was intrinsically motivated to learn.

I started medical school and the first year was predominantly a repetition of the courses I took for my bachelor's degree (e.g., anatomy, embryology, physiology, and histology); however, there was a greater focus on how these basic science topics related to clinical medicine. In recognizing this relationship, I strengthened my belief that these topics were essential for me as a future clinician. On one hand, I was intrinsically motivated to learn this material simply because I found it interesting and enjoyable to learn. On the other hand, because I was in medicine, I was required to take these courses, which imposed an external regulation. I had no choice about whether or not to take these courses. Yet, I still believed that this material was valuable, and I was provided with examples that demonstrated the value; therefore, I fully engaged in these subjects despite external regulation. I engaged because I personally identified with the external regulation; I endorsed and integrated the externally regulated activity into my personal values. My motivation was more extrinsic in nature, but closer to intrinsic motivation on the continuum. A lesser degree of self-determined motivation may have developed had I not believed that these foundational science topics were important elements for physicians to acquire.

Some of my classmates may not have shared my perspective and current medical students may also believe that some of the material they are learning is not important. When students

have doubts about the importance of specific material being taught they ask the question: “Why do we have to know this stuff?” It is possible that they are asking this question because they do not see the importance of the topics being taught and because learning these topics is discordant with their existing personal values or goals and therefore not personally endorsed.

After completing medical school, I was given a Gross Anatomy Teaching Fellowship in which I helped teach gross anatomy to first year medical students. When I had to teach the material, I quickly discovered the importance of trying to relate to the students and to demonstrate the importance of that material for their future. The two elements of relevance and relatedness seemed to be the most effective way to gain access to the students, to capture their interest, and to motivate them to learn the material that I was teaching. I realized that even though I knew the content was relevant from my perspective as a teacher, if I did not present the material in a contextualized manner and demonstrate its relevance then the material would hold little value for the learners and they would not personally endorse it. In fact, they might dismiss the material entirely. Their only remaining motivation to learn the material would simply be to pass the class, an attitude that would not support effective learning.

Medical school curricula are often teacher-centred, meaning that teachers are typically the focal point for content delivery and content management. Medical curricula are also “curriculum-centred,” which is described as a curriculum that is decided by the recommendations and needs of local and national professional governing bodies. In a curriculum-centred program, teachers must follow the topics outlined by these formal governing documents.

As I continued to teach, I discovered the considerable absence of learner-centredness in the curriculum. In the health sciences, students have been involved in curriculum planning and review; however, their role has been peripheral. In the health professions education classroom,

the student role has traditionally been as the passive recipient of content during a teacher-centred lecture. Historically, students were not actively engaged in their learning. They were often not deliberately brought into the experience, through the teaching strategies or through the contextualization of the material. Regardless of level of students' expertise in medicine, each student came with an expectation for what his or her experience in medicine might be. I realized that any discordance between their educational expectations and the reality of medical school would definitely impact their motivation to learn. However, my challenge became to find a way to negotiate the need to follow a mandated curriculum with the need to actively engage the students and to provide a source of motivation recognizing that they may not all be autonomously motivated to learn what I was teaching. This dissertation research was an exploration into understanding student perspectives of the extent to which they felt they were autonomously motivated (i.e., self-determined). By understanding the student experience, I am better able to help teachers focus their teaching approaches to facilitate autonomous motivation, and ultimately to enhance student learning.

Medical Education: Historical Context

In order to understand some of the issues related to student learning and motivation I provide an overview of the historical context of medical education, specifically in North America. In the nineteenth century, medical schools were proprietary organizations associated with universities. Medical schools were established essentially by the will of enthusiastic individuals who often were at conflict with the leadership in other nearby medical schools to which they were originally associated (Field, 1970). Medical schools were not regulated and the educational standards were generally inconsistent and low. Many schools did not have the necessary resources to provide an appropriate and thorough education for their medical students.

Because of rapid westward migration, the number of medical schools had increased at a rapid rate, contributing to the low standard. Moreover, the acceptance criteria into these schools had minimal rigor.

The basic teaching model during that time was predominantly apprenticeship, which usually lasted three years. Students were required to pay to attend specific lectures and anatomy courses. In 1871, Harvard Medical School was the first to institute a three year graded curriculum, which was a significant turning point toward regulation and improving the standards for medical education (Field, 1970).

In the late 1870s, a number of key events took place, which created a renewal of medical education in the United States. First, the American Medical College Association (ultimately known as the Association of American Medical Colleges) was founded; which created a more definitive standard for medical education. Second, a more scientific approach to medicine began influenced by German medical education. Many Americans went to Germany for their medical education and upon their return made efforts to reform the American model. Third, university associated hospitals were founded. Medical specialties and medical journals developed, which strengthened the academic rigor of the discipline (Field, 1970). The most notable medical school founded during this time was Johns Hopkins University School of Medicine, one of the first medical schools to implement a four-year medical program that integrated clinical medicine with sciences and research. In many ways the Johns Hopkins medical program was the model for the future of North American medical education and figured highly in Abraham Flexner's influential evaluation of North American medical education.

In 1905, the American Medical Association, in an effort to standardize and improve the quality of medical education, developed an "ideal standard" curriculum (Field, 1970, p. 508).

This ideal curriculum spanned five years and consisted of one year of natural sciences (e.g., physics, chemistry, and biology), two years of biomedical sciences (e.g., anatomy, physiology, and pathology), followed by two years of clinical medical education. Admissions procedures became more rigorous and the evaluation of medical programs was more closely monitored for compliance to established standards. Many medical schools were closed because of noncompliance with these standards.

In 1908, the American Medical Association consulted the Carnegie Foundation for the Advancement of Teaching, under the leadership of Abraham Flexner, to assess the quality and state of medical education in North America (Finnerty et al., 2010). The resulting *Flexner Report* in 1910 was one of the most influential reports on medical education and its impact is still apparent. The report outlined the historical context of medical education in North America, and made recommendations for future directions for medical education. Flexner documented that Johns Hopkins Medical School was the model of the ideal medical school (Cooke, Irby, Sullivan & Ludmerer, 2006; Field, 1970). It had two years of pre-clinical biomedical sciences education followed by two years of clinical education. The pre-medical education consisted mostly of a degree requirement and rigorous medical admissions processes.

Flexner visited every medical school in North America and in his report described the environment at every medical school. This report raised public awareness of the state of non-compliance of many medical schools. Because of the public nature of this report, it facilitated a rapid change in medical education that had already begun over the prior two decades (Field, 1970). Those schools that continued to be non-compliant with the standards were closed. However, the changes that occurred because of Flexner's report were not without conflict. For instance, historians noted the closure of medical schools for black people and women (Strong-

Boag, 1981, as cited in Hodges, 2005). Other historians felt the changes from the *Flexner Report* facilitated the “corporatization” of medicine, which in turn led to ethical problems related to medicine and the pharmaceutical industry (Hodges, 2005). In spite of these negative consequences, the *Flexner Report* had a significant impact on medical education.

Since the publication of the *Flexner Report*, the state of the general curricular framework has not changed substantially for many medical schools. However, knowledge in biomedical science and educational theory rapidly expanded, along with changes in the depth, emphasis, and organization of topics, and changes in teaching and learning approaches. Medical schools started adding elective time, which allowed students to “mold [their] medical education, in part at least, to [their] abilities, interests and goals” (Field, 1970, p. 521). There was a shift, particularly in Canadian medical schools, to providing earlier patient encounters in the first year of medical school rather than waiting until the third year, which helped to better contextualize student learning. Many medical schools have increasingly moved away from offering only didactic lecture-based teaching. In 1969, McMaster University was the first medical school to use Problem-Based Learning (Barrows & Tamblyn, 1980) as its sole approach to medical education. The PBL approach revolutionized thinking with respect to how medicine was taught and supported communication skills, teamwork, and life-long learning all of which promoted a more learner-centred focus.

More recently, medical educators have advocated for Team-Based Learning (TBL) methods and “flipped lecture” approaches (i.e., assigning pre-session readings for students to complete independently and using in-class time for review, application and feedback; Parmelee, Michaelson, Cook, & Hudes, 2012; Prober & Heath, 2012). These methods shift some of the learning responsibility to the learner, but also create in-class time devoted to application of

concepts. These approaches did not relay facts to students with the expectation that they would be required apply the facts on their own without guidance. TBL and flipped lectures facilitate more opportunities for in-class discussion among learners, and prompt them to ask questions of their teachers. High fidelity simulations allow students to experience many clinical situations, from simple to challenging, in a highly contextual, stimulating, but safe and relatively controlled environment.

Finally, topics such as professionalism, physician/student wellness, social accountability, reflection, and arts and the humanities in medicine are becoming more prominent in the curriculum. The purpose for including these topics is to develop more empathic, well-rounded, and patient-centred physicians. Medical schools also continue to acknowledge and confront the hidden curriculum (the traditional and cultural influences not identified in the formal curriculum that students learn through the actions of and interactions with their teachers), which has a powerful influence on students' perceptions of the role of physicians (Hafferty, 1998), on students' inter- and intra-professional and patient interactions, and on what is included in the curriculum.

Educational approaches such as self-directed learning, learner-centred teaching methods, self-regulated learning, transformative learning, and learner feedback are influencing the way faculty teach and the roles that students and faculty have in the learning process. The student's role in the learning process specifically their motivation is an important element. Medical students are often perceived as highly motivated students; however, in certain contexts the level and type of motivation varies, which in turn affects the quality of learning. Self-determination theory seeks to understand and explain this dynamic. In medical education, self-determination theory is a relatively new and under-utilized theory of motivation (ten Cate, Kusurkar, &

Williams, 2011); however, it holds significant potential to inform teaching practices to maximize and improve the level of motivation and self-regulation of medical students.

Purpose

The purpose of this research was to examine medical students' perspectives of their self-determination in their medical education guided by the three basic psychological needs of self-determination theory – that motivation arises out of the need for autonomy, competence, and relatedness (Deci & Ryan, 2000). The problem that stimulated this research arose out of the tensions created when teachers attempt to motivate medical students to learn in the face of many external sources of regulation, including a mandated curriculum for both courses and content, attendance policies, and promotion grade standards. What may start as an intrinsic, autonomous desire to learn medicine can become an imposed goal to learn a curriculum that contains content that may be discordant with students' goals and values. When such imposed learning outcomes are coupled with teacher-centred instructional strategies, emphasizing passive learning, and little responsibility for active learning, student motivation may become highly externally regulated. The cost is decreased deep learning.

The challenge for teachers is to find ways to reduce these tensions and help students to integrate externally regulated activities into their own personally endorsed values to develop a more self-determined motivation. The first research question that helped to better understand this problem and the tensions within was: What were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?

Competence from a self-determination theoretical framework refers to individuals' perceptions of their ability to achieve a desired outcome (Williams, 2002). One of the key

elements to building competence and confidence in one's abilities comes from careful and thoughtful feedback provided by teachers and mentors. If a learner is unsure of the goals and is not guided, the learner will have difficulty accomplishing the task. Learners with low confidence experience reduced motivation. Therefore, the second question that arose from the purpose of this dissertation project was: What were medical students' perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?

Relatedness to one another, feeling connected or being part of a community, is an important element related to a person being fully self-determined in their actions. When a person feels that they are part of a larger community with common interests and goals, and when they feel safe to explore opportunities to build their competence and confidence, then self-determination is supported and intrinsic motivation is fostered. Communities consist of learners, teachers, and other people that may have an influence on the task or the goal. Teachers are an important part of this community; therefore, the third research question related the purpose was: What were medical students' perspectives of relatedness with their teachers and what was the impact on their learning?

Summary of Research Questions

The research questions for this study follow from the purpose, which was to examine medical students' perspectives of their self-determination in their medical education following the major tenet of self-determination theory. My research questions were:

1. What were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?
2. What were medical students' perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?

3. What were medical students' perspectives of relatedness with their teachers and what was the impact on their learning?

Significance of the Study

By seeking to answer these questions, I developed a better understanding of medical students' perspectives of their learning experiences and how they support or hinder self-determined motivation. As a teacher understanding students' perspectives is important because the most effective source of motivation to learn is one that is integrated by learners; that is, when individuals find personal value or meaning in the activity in which they are engaged. Therefore, if medical educators are able to understand students' perspectives about their experiences of self-determination, then they will be better able to employ more targeted teaching approaches that are consistent with student values and support self-determined motivation in learners. By inquiring into the research questions, I learned more about student perspectives on their motivation, in order to inform teacher practices and develop more self-determined learning environment for students.

Through this research, I elaborated on the understanding of self-determination theory in the context of medical education. Studies employing self-determination theory in medical school do exist; however, the focus has been on role modeling autonomy-supportive interactions with patients and the effect of autonomy support on residency selection (Williams & Deci, 1996; Williams, Wiener, Markakis, Reeve & Deci, 1994). In my research, the broad focus was how self-determination theory supported effective learning in medical students. There is a significant body of research investigating self-determination theory in a variety of learning environments; however, medical school is, as is each discipline, a unique learning environment and medical students are a unique group of individuals. Therefore, understanding more clearly self-

determination theory in the medical school context has potential to make an important contribution to the theory.

Definitions

As part of this exploration of medical students' perspectives of the extent to which they believed that their learning was self-determined, some definitions support the context and understanding of this research.

Medical Student: This term refers to a student who is enrolled in an undergraduate medical doctorate degree program, and in the context of the University of Saskatchewan, it is a four-year program. This definition is not used to describe any other health professions students (e.g., nursing, pharmacy, or dentistry).

Teacher: This term is a broad term that, in the Canadian context, is often associated with elementary and secondary schools. Teacher is not a term that is often used in the medical education world, but I prefer it to professor, instructor, or faculty as a representative but sufficiently generic term for a person who helps students to learn. The term teacher is more specific than educator, which has a broader scope that includes responsibilities beyond the classroom. In my research study, I focused on the teaching role in the classroom.

Preceptor: This term refers to physicians who teach learners in the clinical environment. Preceptors typically work with smaller numbers of students and serve in a more supervisory capacity than does a classroom teacher.

Self-determination: This construct is the key element in the conceptual framework for my research, and is defined as one's perception of personal agency or control over one's actions. People have an innate desire toward development in all areas of life in order to come to a fuller realization of self (Ryan & Deci, 2002). Self-determination and self-actualization is achieved

through fulfillment of three basic psychological needs: autonomy, competence, and relatedness.

The more control or autonomy that individuals have over their actions, and the more that they are supported in their autonomy, through the establishment of personal competence, and by feeling part of larger community of individuals, then the greater their perception of self-determination.

The conceptual link with motivation is that people will have a greater internal drive or motivation toward certain behaviours or outcomes when these three psychological needs are fulfilled. When any one of these needs is absent the motivation is perceived to be external to the individual, which can negatively impact an individual's overall motivation.

Engagement: All teachers should want their students to be engaged. Dunleavy, Willms, Milton and Friesen (2012) organized the engagement construct into two broad categories of “engaged in school” and “engaged in learning.” Engagement in school was further subdivided into social engagement and institutional engagement. Social engagement was defined as the “meaningful participation in the life of the school” (p. 2), which referred to a sense of belonging, participation in various extracurricular activities, and positive relationships at school (p. 3). Institutional engagement was described as “active participation in the requirements for school success” (p. 2), which was observed as attendance in school, timely completion of homework, and positive values related to schooling outcomes (p. 3). Engaged in learning was “intellectual engagement,” which was defined as “a serious emotional and cognitive investment in learning” (p. 2). The authors saw intellectual engagement as interest and motivation to learn, effort in learning, and the quality and of instruction (p. 3). Intellectual engagement was the highest form of engagement because when it occurred, students were “interested, curious, personally invested in the quality of their work, and connected with others in setting and achieving learning goals” (Dunleavy, Milton, & Willms, 2012, p. 2).

These definitions of engagement, and in particular intellectual engagement, are relevant in the context of self-determined motivation. Through autonomy-supportive and competence-building teaching practices in an environment of positive caring relationships, individuals more willingly engage in their learning. Engagement is also an outward sign of high learner motivation (Reeve, 2002).

CASE Curriculum: An educational construct called the *CASE curriculum* is specific to the College of Medicine, University of Saskatchewan. I discuss this construct in the literature review in Chapter 2, and it is defined by the acronym CASE: Cooperative Learning, Active Learning, Self-directed Learning, and Experiential Learning. These four broad teaching approaches are grounded in educational research, and are the guiding principles for how the College of Medicine teachers deliver the curriculum. The strength of the CASE construct is that the four components serve as guiding educational principles, each having a variety of strategies. CASE does not promote a proscriptive single method. Therefore, teachers have flexibility in how they can integrate CASE to best suit varying learning contexts.

Assumptions

I made a number of ontological and epistemological assumptions in my study that provided the supportive framework for my study. In broad terms, I approached this study from a relativistic ontological framework, more specifically, social constructivism. People interpret and make meaning from their experiences in unique ways, and therefore multiple realities exist based on individual experiences (Lincoln & Guba, 1985). In social constructivism, knowledge and understanding of reality is constructed by and through our social interactions. Based on this assumption, I explored these unique and individual experiences of medical students.

A second closely related epistemological assumption was that the learners' experiences of the degree to which they perceived that their learning was self-determined counted as knowledge that could inform educators' current understanding about self-determined motivation. Based on my first assumption that individuals construct their own reality, their knowledge and experiences are therefore essential to understand self-determined motivation.

Another assumption was that individuals have an innate propensity toward continuous personal development and autonomous, self-regulated behaviour. Several psychological theories support the notion that individuals are not naturally inclined toward personal development, but rather develop through reactions and reinforcements within the surrounding environment (e.g. operant behaviourists; Ryan & Deci, 2002). Operant behaviourism tends to support regulatory and external sources of action for individuals. My epistemological framework favoured a growth-oriented understanding over the latter, which guided this study.

Another assumption was that medical students, although motivated to be in medical school, were not necessarily intrinsically motivated to learn all the content areas in the medical curriculum. Depending on the teaching strategies employed, students also may not have been convinced that their autonomy, relatedness, and competence were supported. What the medical students defined as autonomy-supportive, competence building, and relationship forming was based on several different and individual parameters. Students required some extrinsic forms of motivation to help them engage in learning. A key aspect was to explore, from a self-determination framework, the extent to which the sources of extrinsic motivation supported learner autonomy, perceived competence, and relatedness. I sought to generate an integrated source of externally regulated motivation that closely resembled fully intrinsic motivation (Deci & Ryan, 2002).

Limitations

This study explored medical students' perspectives of their self-determination during their medical education. This study was primarily qualitative in nature and the focus was not to enforce the generalizability of results (Lincoln & Guba, 1985).

In a relativistic and constructivist paradigm, the relevant concept is *transferability*, or resonance (Lincoln & Guba). My goal for transferability was to create a reasonable and agreeable interpretation of individuals' experiences, which, when presented to other individuals, would resonate with their experiences and understandings of the phenomenon, such that the new understanding would be transferable to their unique but similar context.

I used the World Café conversational process as my research method for this study, which had limitations. The World Café method was a conversational process, in which during conversations, participants wrote down their thoughts and ideas on tabletop paper in whatever format that was meaningful for them. Their recordings could be in the form of images, concept maps, bullet points, or sentences. This format of recording information was limited by my ability to understand and interpret participants' ideas. To address this limitation, I reminded students throughout the duration of the World Café session to record their contributions, and to provide enough detail so I would be able to understand the intentions of their contributions. I also visited tables during the conversations to monitor and encourage recording. Finally, after each small group session a large-group discussion occurred, where participants could clarify their ideas, which I then recorded. Despite these interventions, some of the participants' insights were likely not recorded, and I may not have completely understood every comment recorded as intended by the participant, which were further limitations.

Another potential limitation was my relationship with the medical students, as their professor and the research lead. To clarify my relationship with students, I briefly describe the organization of the undergraduate medical program at the University of Saskatchewan. The undergraduate medical program is a 4-year degree, and it is divided into four phases, Phases A-D. Phase A is the first year of medical school; Phase B is the second year; Phase C is the first term of third year, and Phase D is the second term of third year and all of the fourth year. Each phase has a faculty administrative lead (i.e., Phase Chair) responsible for overseeing the organization of all courses, coordinating faculty teachers within the respective phase, and also acting as a liaison for students to deal with issues related to the phase. I held the position of Phase A Chair. I was also a teacher in Phase A. In both of these roles, I got to know the students throughout the year. The limitation in that context was that I held a position of authority directly related to the Phase A students. Because I had also taught all other students in the latter phases, that position of authority also may have affected upper year students. My relationship with the students was an important issue for me to be mindful of so that I might ensure that there was no form of coercion.

I attempted to mitigate this authority relationship by adhering to the standards set forth by the Research Ethics Board of the University of Saskatchewan. For example, I made clear to all students that participation was voluntary; that all information was de-identified and presented in aggregate form to protect the anonymity of participants; that any comments or perspectives provided did not impact on their academic or professional standing within the college; that should they have chosen not to participate, or decided to withdraw at anytime, that decision had no impact on their academic or professional standing in the college.

The World Café method also served as a mitigating factor for my relationship with the students. In this process, although I was the coordinator and led the event, I did not directly listen to or interact with the participants during their discussions. I provided the participants with focused questions to discuss and they directed the subsequent discussion process. I did not facilitate at each table, or directly guide the discussion. By removing myself from that conversational process, I attempted to enable the students to speak freely during their discussions.

The participants volunteered for this study, which may have contributed to potential self-selection bias of only students who had specific opinions related to their self-determination. That I could not control who volunteered for this study was another limitation. I accepted this as a limitation because I wanted to ensure participation from all years in the medical program. I attempted to mitigate this limitation by constructing my invitation to participate using language that would avoid bias toward one participant perspective over another. The discussion points during the World Café were structured to encourage participants to reflect equally on both positive and negative experiences.

Delimitations

Here, I describe the delimitations of this study. I used self-determination theory as my theoretical construct. Although other validated motivational theories exist, none of them appeared to me to encompass the personal factors that influenced motivation to the extent that self-determination theory did. Specifically, the notion that extrinsic motivation is a continuum ranging from complete external regulation to a form of extrinsic motivation that is highly internally regulated was of particular relevance for me in understanding medical student perspectives of their self-determination during medical school.

The second delimitation was that I engaged only students from the University of Saskatchewan College of Medicine undergraduate medical education program. At the time of my study, the College of Medicine was in the initial stages of implementation of a significant curriculum renewal. It proved advantageous to develop a better understanding of student motivation during this time of renewal. If the Colleges' teachers had a better understanding of students' perspectives of self-determination, then they could focus efforts to offer better and more effective teaching methods and improve interactions with students to support self-determined behaviours.

Summary of Chapter 1

Medical students are typically considered a motivated, hard working, and high achieving group of students. For the majority of them, there is a clear desire to be in medicine and to become a physician. From an academic perspective, the assumption in the journey to become a physician is that, along the way, medical students are *intrinsically* motivated to learn everything that they are taught. However, a tension begins to arise as they encounter courses and concepts that may not be consistent with their individual goals or their expectations for what material would, could, or should be taught in order for them to become a physician. Another tension is created when students do not feel that their autonomy is supported through their interaction with their teachers or through the teaching strategies that are employed.

These tensions can impact the type and quality of their motivation to learn, such that they may no longer feel autonomously motivated to learn everything presented to them in their coursework. Students will still be motivated to learn; however, the source of that motivation typically varies along a continuum from externally regulated motivation (e.g., a desire to achieve good grades, or to fulfill program requirements) to more internally regulated extrinsic motivation

(e.g., recognition that concepts or courses, although perceived to be less personally relevant, are understood to be valuable in their educational journey). The goal in my dissertation research was to understand the extent to which medical students perceived that their medical education was self-determined. I wanted to find where they were on this spectrum. From that point, I sought to discover how faculty could learn from medical students' motivational perspectives in order to strengthen the students' self-determined motivation.

In Chapter 2, I explore in more depth the current state of medical education, because in order to understand medical student learning motivation, I believed it was important to understand current teaching and learning practices in medical schools, and specifically in the College of Medicine at the University of Saskatchewan. I further describe self-determination theory, discuss its relatively small role in medical education, identify other relevant theoretical constructs that support self-determination theory, and provide justification for the relevance of self-determination theory in this study.

In Chapter 3, I discuss the methodology that guided my methods and the design of my study, and how I applied these methods to attempt to address the research purpose and questions.

CHAPTER 2: LITERATURE REVIEW

In this chapter, I provide a review of the literature relating to learning and teaching, and motivation. In order for students to learn effectively, teachers must engage learners in a meaningful way. Simply providing facts without context, meaning and cognitive action by the students could be considered an act of teaching, but it does not necessarily mean that learning is occurring. In the moment of such a single passive teaching episode, little learning may happen at all. When learners actively engage with the material deep learning occurs. What is the teacher's role in this active type of teaching? What strategies can teachers use to facilitate learning? These questions are challenging for teachers to address especially in a teacher-centric model. However, one can learn much from the learners, by exploring their experiences of motivation and learning that can inform teaching practices. In this literature review, I will outline the conceptual framework that guided how I addressed these important issues and my related research.

I discuss the state of various learning methods in medical education and the relationship of these methods to the key elements of self-determination theory. I also discuss the current state of self-determination theory in medical education which, to date, had not been widely studied as a means to help understand learner motivation. I present the key features of this motivational theory.

Again, the purpose of this research was to examine medical students' perspectives of their self-determination during their medical education. The major theoretical underpinning I addressed in the literature review was self-determination theory, which has been attributed to the work of Edward Deci and Richard Ryan who demonstrated that learning motivation involved more than provision of "carrots and sticks" as a means to cause people to act to achieve an

outcome. In fact, what they, and other researchers on motivation, found was that extrinsic rewards used to motivate people often had a detrimental long-term effect on an individual's interest and motivation toward an activity or task (Ryan & Deci, 2002). Instead, they found that the most effective source of motivation for an individual to engage in any task came from within the individual and must meet their basic psychological needs for autonomy, competence, and relatedness (Deci, Vellerand, Pelletier & Ryan, 1991).

Ryan and Deci (2002) described self-determination theory as an amalgamation of several smaller theories. The outcome of their work was to expand on the concepts of extrinsic and intrinsic motivation to demonstrate that these two concepts were not mutually exclusive dichotomies. Rather, they said that motivation was on a continuum extending from amotivation (a complete absence of motivation), to extrinsic motivation, and ultimately to intrinsic motivation, which was the highest form of motivation.

Teachers play a major role in motivating learners. Understanding the spectrum of motivation is important because not every learner will be intrinsically motivated to learn. When teachers understand that a form extrinsic motivation exists that is similar to natural intrinsic motivation, they can structure their teaching strategies to support intrinsic motivation and still promote effective learning (Reeve, 2002). Supporting a more autonomously regulated form of extrinsic motivation requires an understanding of the learner's perspective regarding the extent to which they feel self-determined.

Other allied constructs exist that further explain and support self-determined motivation as a relevant theoretical construct pertinent to this study. Learner-centred educational practices place the student at the focal point of the learning process, and in doing so, give more autonomy to the learner (McCombs & Miller, 2007). This approach to teaching and learning is a necessary

element for creating fully realized self-determination. By contrast, in a teacher-centred curriculum, choice, control, and responsibility for learning are shifted away from the student, which subsequently stifles motivation (Reeve, 2002).

Another allied construct related to self-determination theory is learner engagement. This construct has two broad connotations, and each has implications for learner motivation. Dunleavy, Willms, et al. (2012) organized engagement into two categories: “engaged in school” and “engaged in learning.” Engagement in school referred to social engagement and institutional engagement, which related to participation in the life and required elements of the institution. Examples include extracurricular activities, building positive relationships, attendance, and completion of homework. Engagement in learning, also referred to as “intellectual engagement,” was “a serious emotional and cognitive investment in learning” (Dunleavy, Willms, et al., p. 2). Examples of intellectual engagement included interest and motivation to learn, effort in learning, and the quality and of instruction (p. 3). Intellectual engagement was the highest form of engagement, because when it occurred, students were “interested, curious, personally invested in the quality of their work, and connected with others in setting and achieving learning goals” (Dunleavy, Milton, et al., 2012, p. 2). These qualities of learner engagement are also critical for promoting self-determined motivation.

When learners are involved in their learning, they feel that they are part of the learning process, they believe they are a part of a larger community of learners, their motivation to learn is positively impacted, and they experience positive learning outcomes (Reeve, 2002). Many pedagogical approaches support these key educational principles, and in medical education a number of approaches exist that are particularly beneficial for teaching in the medical

curriculum. I discuss these teaching approaches in detail as well as their relationships to self-determination theory.

State of Medical Education

Effective teaching methods enhance student motivation and learning. In this section of the literature review, I provide an overview of some teaching and learning methods that, at the time of this study, were topical or considered best practices in medical education. This list is not intended to be exhaustive of all teaching methods being used, but representative of the state of medical education. I discuss how these learning methods relate to the basic psychological needs related to self-determination.

Teaching and learning methods. Teaching methods range in level of sophistication from the simple lecture, to more complex situated learning approaches. Understanding of the effective use of these methods continues to grow and change with time. Teachers face the constant challenge of trying to engage learners more effectively, and to place the learning into the hands of the students in order to motivate students in new and exciting ways (Dunleavy, Willms, et al., 2012). With this challenge comes an opportunity to explore creative and innovative teaching approaches with the goal of helping students to learn more effectively (Lage, Platt & Treglia, 2000).

I highlight a number teaching and learning methods that have become popular in medical education. These popular methods help create the context for an explanation of self-determination theory, and they are relevant for medical education.

Active learning. Active learning has become a key teaching tool in the repertoire of all classroom teachers, including medical educators. Active learning is a technique used by teachers to help students become more actively involved in their learning (Michael, 2006). Active

learning helps students to “engage in some activity that forces them to reflect upon ideas and how they are using those ideas...requiring students to regularly assess their degree of understanding and skill at handling concepts or problems in a particular discipline” (Collins & O’Brien, as cited in Michael, 2006, p. 160). This definition of active learning is applied to the classroom context, as distinguished from the term homework (Prince, 2004). Homework is an active task, but it occurs outside the classroom context.

Active learning is applied in many forms and ranges from simple tasks, such as think-pair-share and interactive audience-response polling systems, to more complex case-based learning and discovery learning activities (Michael, 2006). Any classroom activity that stimulates active student contribution or participation in their learning is active learning. The central concept in any active learning technique involves the shift away from the students being passive recipients of knowledge to being actively engaged in learning. Active learning is learner-centred because the instructor is no longer the driver of the learning process.

Researchers have demonstrated that active learning methods produced better learning outcomes, including better conceptual understanding, academic achievement, problem solving ability, and long-term retention (Prince, 2004 & Michael, 2006). Laws, Sokoloff, and Thornton (1999) and Hake (1998) demonstrated that use of active learning methods in physics teaching led to improvement of conceptual understanding by learners compared to learners taught without active learning methods. Active learning is successful because students are engaging their mind in actively processing information; integrating that information with their existing knowledge framework; and applying new knowledge in new ways (Knapper, 2007).

Active learning is a motivating process because it engages the learner in the learning process, and gives control to the students who become responsible for their own learning

(Knapper, 2007), which in turn supports their autonomy. Active learning also provides learners with an immediate source of feedback, either directly from the teacher or from their peers or technology. Feedback helps students to know that they are progressing, or where there is misunderstanding and how they can correct it. Effective feedback helps learners to feel a greater sense of competence, that is, “the degree to which they feel able to achieve their goals” (Williams, 2002, p. 235), which itself is another important element of self-determined motivation. Learners feel a greater sense of motivation in an environment where they are able to interact with their peers and the teacher to build a small learning community within the classroom (Reeve, 2002).

Learner feedback. Providing feedback to learners is a critical element in the learning process. Feedback provides learners with necessary information to support the development of competence and confidence in the requisite knowledge, skills and attitudes of an educational program. Without appropriate guidance, learners find it difficult to correct errors and adjust practice. Learners who do not receive effective feedback, or do not reflect on their feedback regarding inappropriate or inadequate knowledge, skills, and attitudes fail to improve; or worse, their knowledge, skills, and attitudes may deteriorate (Brydges, Dubrowski, & Regehr, 2010).

Archer (2010) summarized the literature on the complexity of providing effective feedback in the health professions. The type, structure, and timing of feedback are all important factors to be considered. The most useful type of feedback uses a facilitative approach, which is specific and supports learners coming to appropriate conclusions about their learning needs. Providing feedback to simply inform learners when they are either right or wrong with a less facilitative approach is also effective (Archer).

Archer (2010) recommended that face-to-face delivery of feedback is the most appropriate and effective means to support learner development. Provision of feedback in other forms is also helpful to the learner should face-to-face feedback not be possible; however, challenges may arise related to conveying context in written statements and addressing more complex issues. Complex feedback may be delivered more effectively by scaffolding so that learners are able to absorb the information in manageable chunks with clarification added as needed.

The timing of feedback also influences its effectiveness. Immediate feedback is helpful for procedural skills; however, delayed feedback is more effective for complex and knowledge-oriented activities (Archer 2010). He emphasized that all feedback encounters should be a supportive and mindful/reflective process focusing on the person's knowledge and behaviour and less on the individual. Effective feedback should focus on personally meaningful goal setting, consistent with the observed event. That is, feedback should be contextual. Further, providing feedback should be an interactive process, where the learner has an opportunity to discuss it and seek clarification.

From a self-determination theory lens, provision of feedback is important because it supports the basic psychological need of competence. By giving specific, constructive, goal-oriented, and meaningful feedback that encourages learners to reflect on their experiences, teachers support learners' perceptions about their ability to achieve goals (ten Cate, et al., 2011). Effective feedback supports a more self-determined motivation.

Problem-Based learning. One of the most influential medical education innovations has been Problem-Based Learning (PBL). First used in a medical school curriculum in 1969 at McMaster University, the PBL method has been incorporated into medical schools around the

world (Lee & Kwan, 1997). The PBL method represents a significant departure from traditional didactic lecture-based learning; whereby, a *problem* is at the centre of the learning process. The problem and learners' attempt to solve it drives the learning (Barrows, 1988).

In PBL, students work in collaborative small groups on realistic ill-structured and undifferentiated problems. The ill-structured nature creates authenticity, because it represents a certain “messy” reality (Barrows & Tamblyn, 1980). The opening problem is often only one or two sentences long, but it challenges students to analyze every word, test assumptions in their thinking, generate hypotheses, and ask both broad and detailed questions to test their hypotheses. Some questions cannot be answered in the session, and learning tasks are thus created. The students then seek answers to these learning tasks either independently, or collaboratively outside of the session. The students bring back the gathered information and through a deductive process, adjust their hypotheses according to the new information. More information about the problem is progressively revealed until the students reach a conclusion and decision in their management of the problem.

PBL groups are organized with one tutor who may or may not be an expert in the area related to the problem (Barrows, 1988). The tutor's role is to focus on facilitating the learning process, as opposed to being a content expert (Barrows & Tamblyn, 1980). Tutors facilitate discussion among students to encourage: (a) elaboration of concepts and ideas about the problem, (b) integration of prior knowledge and application of that knowledge to the problem, and, (c) asking questions and seeking clarification throughout the process (Dolmans, De Grave, Wolfhagen, & van der Vleuten, 2005).

PBL has been researched extensively (Vernon & Blake, 1993; Albanese & Mitchell, 1993; Colliver, 2000). From an academic perspective, researchers have found that PBL is at

least as effective as traditional methods. Norman (2008) suggested that such comparisons are difficult to make, because of the difficulty in standardizing learning environments, and blinding students to an intervention. Other medical educators have argued that other non-academic advantages emerge such as fostering self-directed and life-long learning behaviours (Dolmans et al., 2005); encouraging collaboration (Dolmans et al., 2005); and building stronger interpersonal relationships with patients (Distlehorst, Dawson, Robbs, & Barrows, 2005).

From a self-determination theory lens, one advantage of PBL is that it builds on learners' autonomy. Although learning goals and objectives are provided for every PBL session by the course coordinators, the learners control how they achieve the objectives. Because these problems resemble real cases, learners endorse these activities and are motivated to engage and learn from them. Working in small groups fosters a sense of community among group members, and this connectedness to one another provides a source of motivation (Reeve, 2002). Further, PBL strengthens students' perceptions of personal competence. Perceived competence is increased through continuous feedback from tutors and group members, which supports learners' confidence in their ability to achieve the task (ten Cate, et al., 2011).

Team-based learning. Team-based learning (TBL) is a relatively new teaching approach in medical education (Haidet, Morgan, O'Malley, Moran & Richards, 2004). TBL incorporates active learning, collaborative learning, problem solving, and application. These elements shift the focus of teaching away from passive lecture and knowledge acquisition, to knowledge building, integration, and application (Neider, Parmelee, Stolfi, & Hudes, 2005). The TBL approach and versions of it are used in medical schools around the world.

Parmelee, Michalesen, Cook, and Hudes (2012, pp. e275-e287) have described TBL, and here I provide a summary. Students are first provided with structured reading assignments to be

completed before a large-group session. The expectations are clear to the students that the pre-session readings need to be completed and the students are provided with a framework to help them with the readings in a guided and intentional manner. At the large-group session, students first complete an Individual Readiness Assurance Test (IRAT), a quick multiple choice question test to determine if each student has acquired a basic knowledge of the material. The IRAT also serves as a form of individual accountability.

Immediately following the IRAT, the students gather in pre-arranged groups and work through the same questions tested in the IRAT. This activity is called the Group Readiness Assurance Test (GRAT). Here, they openly discuss their ideas and if there is any disagreement among students, they work through the problem by explaining their understanding and rationale for their respective answers. Ultimately, the team must come to an agreement on an answer. If they choose the wrong answer, they need to re-group and reconsider their understanding of the question and select a new answer. The team applies this process until they choose the correct answer.

Next, an open session occurs where students can approach the teacher for answers to specific questions, and the teacher can clarify misunderstood questions. For example, if any ambiguity in a question exists or if students can provide a strong rationale for why they believe an “incorrect” answer is correct, then the teacher will determine if the rationale provided is acceptable, warranting an adjustment to the question.

After these Readiness Assurance Tests, the class then works in the same groups on team application exercises. The goal is to encourage students to go beyond memorizing into application of knowledge to clinically relevant case problems. Groups are given a case problem and an associated multiple-choice question. They are given an allotted amount of time to work

on the case, after which the groups must reveal their answers. Different answers among groups facilitate a discussion of the various rationales for answers. The teacher acts as mediator and facilitator of the discussion. The also teacher provides closure to the discussion by giving a model answer, which includes key points or take-home messages for that problem.

The TBL method is consistent with an autonomy supportive and constructivist learning environment (ten Cate, et al., 2011; Hrynychak & Batty, 2012). Students have control over their learning. They are given responsibility for learning the basic information and the focus is shifted away from the teacher. They are given the time and appropriate peer and teacher feedback at various stages throughout the process (e.g., IRAT, GRAT, and team application), which helps build learner competence. Students are given realistic clinical problems, which helps to demonstrate relevance and to anchor new information in the learners' memories in meaningful ways. Establishing positive relationships within the group is essential, because the learning is dependent on the effectiveness of the group interaction.

Research into the effectiveness of TBL has been limited; however, early studies suggest a positive impact on academic learning outcomes (Thomas & Bowen, 2011; Tan et al., 2011). Furthermore, TBL appears to have a significant effect on students who are academically weaker (Sisk, 2011). TBL also had a positive impact on other non-academic measures including, attitudes toward teamwork, and perceptions of problem-solving ability when working on teams (Parmelee et al., 2012).

Flipped classroom. The flipped classroom method of teaching and learning is new to medical education; however, its momentum as a pedagogically effective teaching method for medical education continues to develop (Prober & Khan, 2013; Prober & Heath, 2012). Lage et al. (2000) formally proposed the concept, although one could argue that the traditional seminar

approach used in graduate studies and other more discussion-based courses was based on a “flipped” approach and had been a long-standing pedagogical mainstay. The flipped classroom refers to an alternative approach to teaching where “events that have traditionally taken place *inside* the classroom now take place *outside* the classroom and vice versa” (Lage et al., p. 32). In a lecture-based approach, students come to class to learn the basic facts and possibly about how the facts are applied. Learners are then responsible for problem solving and application outside of class time. The problem with this approach is that problem solving is a more difficult cognitive activity and students were doing it without guidance of a teacher. Flipping the classroom means that learners spend time outside of the classroom learning the basic content that would have been delivered by lecture, and inside the classroom they would work on problems, integration, and application of the concepts when they have the support of a teacher.

The flipped classroom approach was born out of dissatisfaction with the limitations of the traditional lecture-based approach to appeal to a variety of learning styles (Lage, et al., 2000). Delivering basic content monopolized curriculum time and students were not given the opportunity to apply that knowledge in any meaningful context. As a result, students forgot information faster, and student learning tended to be more superficial because it was not connected to a meaningful context. Moreover, because students were not applying the information and not receiving feedback, there was no assurance that they were learning the correct information.

The basic approach to the flipped classroom involves the teacher preparing materials that students view on their own time before attending class. The materials may be open-source web-based materials (e.g., YouTube videos), or they may be videos produced by the teacher. The materials may be as simple as a summary sheet or textbook readings. At the in-class session, the

teacher provides a brief review session where students clarify concepts. The students are then divided into small groups (informal or formal). The teacher then provides worksheets to the students and they work through application problems as a small group. During that time, the teacher moves from group to group to provide assistance or clarification as needed. Near the end of the session, the teacher engages a large-group open discussion of the problems, key concepts, and solutions.

The flipped classroom has been compared to the Team-Based Learning approach (Herried & Schiller, 2013). The most significant difference between the two is that TBL has a more formalized and structured approach, whereas the flipped classroom is more flexible in that a teacher can structure the presentation of the materials to meet the needs of the students and course.

Evaluation of the flipped classroom method is in its infancy. Much of the information comes from student evaluations of satisfaction and student perceptions of learning, with few studies investigating learning outcomes such as student performance. Measures of student satisfaction strongly support the flipped classroom method (Pierce & Fox, 2012; Lage, et al., 2000). Ruddick (2012) compared the flipped classroom to standard lectures in a preparatory college chemistry course. Students who experienced the flipped approach scored statistically significantly better on final exams. Ruddick also found that fewer students withdrew from the chemistry course, an increase in the overall grade average was reported, and students were more interested and engaged in the material. Pierce and Fox (2012) compared the final exam grades of students from two academic cohorts, where one cohort was given traditional lectures and the other cohort used the flipped approach. The students who engaged in the flipped classroom

approach had a statistically significantly higher average. More sophisticated studies of the academic effectiveness of the flipped lecture approach are needed.

Like the TBL approach, flipped lectures create an autonomy supportive environment compared to traditional lectures. Students are able to view the pre-recorded materials on their own time, at their own pace, and in their own learning environment (Fulton, 2012). By focusing on application and problem solving, the students are able to see the immediate relevance and value of a topic. Therefore, they personally endorse the learning process and are more motivated to engage (Ryan & Deci, 2002). Having the activity and problem-solving application portion take place inside the classroom allows students to work through problems with peers and teachers, and allows them to obtain immediate feedback on their understanding (Fulton, 2012). This timely and specific feedback supports development of competence, and thus becomes a valuable source of autonomous motivation.

Furthermore, when students solve problems together and teach one another, they create positive peer interactions. In addition, teachers are able to interact at a more personal level with students help to build positive teaching relationships. Both of these elements serve to bolster the learning motivation of students.

Massive Open Online Courses (MOOCs). MOOCs are online courses that are available to anyone; thus, massive refers to the fact that thousands of people can participate. Masters (2011, para. 5) explained that the term “open” connoted several meanings including: (a) open-source software, (b) registration that is open to anyone, (c) the curriculum may be open to change as students provide content and process-specific information, (d) information sources are open, (e) assessments, if any, may also be open to the learner, and (f) learners are open to a variety of learning contexts.

At the time of this study, thousands of medically relevant MOOCs were available to students. Harder (2013) noted that no medical schools had allowed MOOCs to be taken for curriculum credit; however, practicing physicians are able to receive continuing medical education credit for participating in MOOCs. MOOCs are advantageous for the cognitive aspects of the medical curriculum; however, because a significant element of the curriculum involves development and practice of clinical skills, MOOCs would not likely ever be the sole method of medical education (p. 2).

The “open” nature of MOOCs is a relevant concept that supports the basic need of autonomy for learner self-determination. By being open to anyone, and many MOOCs being accessible at any time to students, they offer students choice for what, how, and when they engage in learning. Students are also able to choose which courses they enroll in, which most often is guided by interest. The level of learner interest determines the most authentic forms of self-determined, intrinsic motivation. Potential limitations of MOOCs based on the basic needs of self-determination relate to competence and relatedness. If MOOCs do not offer clear objectives, guidance, feedback, and assessment of learning, they hinder students’ perceptions of their competence (i.e., their confidence in ability to achieve their goals), which hinders their motivation. Because MOOCs are online and have the potential to serve several thousands of students in a single course, the basic need of relatedness may not be supported, which may impact learner motivation. If a learner engages in a MOOC strictly out of personal interest, then relatedness may not be a critical element for supporting self-determination because of the existing intrinsic motivation to engage in the course (Ryan & Deci, 2002). However, if a student participates in a MOOC for extrinsic reasons (i.e., a local program requirement, or a teacher requires that a student enroll in a MOOC), insufficient relatedness may negatively impact their

self-determination. These limitations on competence and relatedness are not necessarily exclusive to MOOCs, although relatedness elements would be more difficult to support in MOOCs. Incorporation of competence and relatedness supportive elements would enhance learner-self-determination.

Self-regulated learning and self-directed learning. Brydges and Butler (2012) discussed the importance of self-regulated learning in medical education and medical practice. They argued that because the medical profession is self-regulated, the expectation is that individuals within the profession must be able to self-regulate. Thus, training in medical school programs should support students' development of self-regulated behaviours, specifically related to their learning. Self-regulation is often associated with self-directed learning. The connection between the two concepts is that in order to be an effective self-directed learner, one must be effective at self-regulating.

Self-regulated learning is defined as “self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals” (Zimmerman, 2000, p. 14). One could situate “personal goals” further in an education context to be personal “learning” goals. Sandars and Cleary (2011) elaborated on this definition for the context of medicine describing it as “the cyclical control of academic and clinical performance through several key processes that include goal-directed behaviour, use of specific strategies to attain goals, and adaptation and modification to one’s behaviours or strategies to optimize learning and performance” (p.876).

Highly self-regulated learners prepare themselves for any learning experience by creating learning goals for the experience. During the experience, self-regulated learners are continuously monitoring themselves to ensure that they are creating the best environment for

their learning through maintenance of focus, positive self-talk, and mental rehearsal (Sandars & Cleary, 2011). After the completion of a task, effective self-regulated learners reflect on the experience, determine if they have met their goals, draw conclusions about their strengths and limitations, and develop plans that incorporate any necessary changes, which would then be re-evaluated in a new learning cycle.

Self-directed learning is defined as “a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (Knowles, 1975, as cited in Murad, Coto-Yglesias, Varkey, Prokop, & Murad, 2010, p. 1058).

The definitions of self-regulated and self-directed learning are similar. They both are learner-centred, and they focus on identification and evaluation of goals and outcomes. The differences between these processes were discussed by Loyens, Magda and Rikers (2008). Self-regulated learning tends to focus more on individual learner characteristics, whereas self-directed learning is broader in its application and encompasses both the learning environment and learner characteristics. Thus, one can use self-directed learning as a method or an approach within the curriculum, such that it emphasizes “student freedom in the pursuit of learning” (Loyens et al., p. 418), but it can also be a characteristic of the individual, to be more or less self-directed.

The other major difference between them relates to the degree of control exerted by the learner at different stages of the learning process. In pure application of self-directed learning, the learner defines the learning goals at the outset. In self-regulated learning, the teacher may define the learning outcomes and the task at the outset with the learner subsequently taking responsibility for the learning strategies and monitoring their learning (Loyens et al., 2008).

Whether discussing self-directed learning or self-regulated learning, most authors agree that both processes are skills that must be developed in learners by support from teachers (Brydges & Butler, 2011; Loyens et al., 2008). Simply providing opportunities for students to work independently without feedback and without understanding the expectations regarding self-regulated learning would result in ineffective self-regulation, and ineffective learning.

Murad et al. (2010) conducted a systematic review of the literature on the effectiveness of self-directed learning. They found that using self-directed learning methods was more effective in the knowledge domain compared to using more traditional teaching approaches. Specifically, self-directed learning was more effective for advanced learners, and when the learners were involved in identifying their own learning resources and best learning methods. That self-directed learning was most effective for advanced learners emphasized the need for a guided approach for novice learners who may need support in developing this skill (Brydges & Butler, 2011).

Sandars and Cleary (2011) suggested that advanced learners were more effective self-directed learners because they had a more advanced self-regulatory process than did novice learners. As a result, the learning goals of the former were clear; they were better able to monitor their progress and adjust their strategies, and they could better reflect on the outcome and make changes in order to positively impact similar future experiences.

From a self-determination motivation framework, teachers who incorporate appropriate and effective self-regulated learning opportunities foster stronger learner autonomy, which is a key element of self-determined motivational behaviour. When self-regulated learning is guided appropriately, it can improve learner competence and confidence. A guided approach also

supports a stronger relationship between the teacher and the student, which also enhances self-determined student motivation (Ryan & Deci, 2002)

Competency-based curricula. Recently, a shift has been occurring in medical education toward a competency-based curriculum. In medicine, as in many professional colleges, a specific set of professional knowledge, skills, and attitudes has been established in which a student must become competent during their professional training, development, and formation. The traditional approach established a core curriculum within a program with specified timelines to complete the curriculum, or specific stages of it. In most cases in North America the durations of the undergraduate medical program is either three or four years. If students do not achieve the required knowledge, skills, or attitudes within the allotted time, they risk failure and/or remediation, or possible removal from the program.

The Association of Faculties of Medicine of Canada (AFMC) through a broad consultative process published a document, *The Future of Medical Education in Canada* (FMEC; AFMC, 2010), which contained 10 recommendations for undergraduate medical education. One of the recommendations was for medical schools to “adopt a competency-based and flexible approach” to medical education (p. 29). In this recommendation the AFMC acknowledged that what mattered most was teaching core competencies and ensuring that learners develop and meet these competencies, and not necessarily that learners develop these competencies within a specified timeframe.

A competency-based approach will afford students the opportunity to progress through components of their learning at their own pace, with greater opportunity to pursue and develop their own interests, and all the while assured that they will emerge with the necessary core competencies required of a physician. (AFMC, 2010, p. 30)

From a motivational perspective, a competency-based approach is more learner-centred and offers learners more autonomy compared to a more traditional approach where students followed a specified curricular time frame. Competency-based educational approaches acknowledge that students have various learning styles and needs, and that they have diverse strengths and limitations that may require varying amounts of time to complete. Providing flexibility in the curriculum and allowing students to pursue interests supports their autonomy. Because a competency-based curriculum focuses on the development of competencies, learners receive multiple opportunities to practice and apply their skills and to receive appropriate feedback to adjust and grow, which in turn bolsters motivation.

Because such a curriculum is flexible, it would require strong communication and effective relationships between teachers and learners to give appropriate and timely feedback, and to provide mentorship and guidance throughout the educational process.

CASE curriculum. The *CASE curriculum* is a unique pedagogical approach adopted by the College of Medicine at the University of Saskatchewan that incorporates cooperative, active, self-directed, and experiential learning. CASE is an advantageous approach to curricular design because it allows teachers to choose methods that work best for the comfort level of their students and themselves, and for the learning context.

Cooperative learning is “the instructional use of small groups so that students work together to maximize their own and one another’s learning” (Johnson & Johnson, 1990, p. 69). Cooperative learning has five key elements: positive interdependence (students rely on one another for success), face-to-face promotive interaction (students work together to promote learning), social skill enhancement (ensuring effective social interaction), individual accountability (students must be accountable for their own knowledge and understanding), and

group processing (students reflect on and maintain the effectiveness of the group). Cooperative learning has taken many forms and has been extensively researched. The research on this method demonstrates that cooperative learning is an effective approach to help students learn (Johnson, Johnson, & Stanne, 2000).

Active Learning is any teaching and learning method that encourages students to participate in their learning. Active learning is accomplished by giving students time to reflect on questions, discuss topics, answer questions individually or in groups, and summarize key thoughts. Through such activities, students are able to identify areas of misunderstanding and seek clarification as needed. Active learning, like cooperative learning, employs different strategies that if used effectively support and enhance learning (Bligh, 2000).

Self-directed learning is not always focused on learning specific course objectives; rather, by providing opportunities for self-directed learning, teachers give students choice in how they engage in their learning. The opportunity for students to self-direct their learning supports life-long learning and self-determined motivation.

Experiential Learning is another component of the CASE curriculum approach, in which students engage in an experience designed to support and enhance their understanding of knowledge, skills, and attitudes taught within a course. Experiential learning involves not only active participation by students, but it also has an element of reflection before, during, and after the activity. If experiential learning is effectively implemented, students enter into an activity with specific goals, reflect on the outcome of the activity, and adjust their thinking and actions for future similar encounters. Thus, a cyclical process of planning, acting, reflecting, and adjusting is engaged in order to guide future action.

Experiential learning plays an important role in motivation because it engages students in real-life or life-like activities. This engagement helps students to see more clearly the relevance of the subject being taught, which supports autonomous motivation. Furthermore, the cyclical reflective and evaluative process supports the development of competence in the learner, which again supports autonomous motivation.

Teachers who understand and incorporate effective teaching approaches can help motivate students to learn by increasing their capacity to take responsibility for their learning, to increase their desire to want to learn, to increase their feeling that they are capable of learning what they set out to learn, and to help the students feel that they are part of a community of learners. These key elements ultimately improve learning outcomes (Ryan & Deci, 2002), and they are all encapsulated in the self-determination theory framework.

Self-Determination Theory

The purpose of this research was to explore the medical students' perspectives of their self-determination during their medical education. In order to explore this idea one needs to have an understanding of self-determination theory, to explore how it applies in the educational context, and to review some of the research that supports self-determination theory as a relevant motivational construct for medical education.

Researchers have utilized self-determination theory in medical education to examine motivation for career choice (Williams, Wiener, et al., 1994) and internalization of biopsychosocial values (Williams & Deci, 1996); however, medical students' perspectives about their self-determination and the impact it has on learning have not been adequately examined. Understanding motivation from the learner's perspective is important because self-determined motivation is largely dependent on the individual. Understanding learner motivation from the

learner's perspective helps educators by informing their teaching practice, because teachers are able to focus their teaching practices based on the needs of the learners.

Self-determination theory posited that the actualization of human potential and ultimate attainment of a sense of self occurred through the fulfillment of the basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2002, pp. 3-8). In this theory, the terms extrinsic and intrinsic motivation were identified and placed on a qualitative spectrum ranging from amotivation (i.e., non-self-determined behaviour), to externally regulated extrinsic motivation, to internally regulated extrinsic motivation, and to intrinsic motivation (i.e., fully self-determined behaviour) (Ryan & Deci, 2000).

Self-determination theory is one theory of motivation among many (see Bandura, 1977; Dweck & Leggett, 1988; Weiner, 2010; Wigfield & Eccles, 2000; Thompson, Davidson & Barber, 1995). This theory directly addresses the concept of intrinsic versus extrinsic motivation, and it addresses how learners can still be autonomously motivated to engage in learning material outside of their existing personal interests, through a process of internalization (Deci & Ryan, 2002).

Self-determination theory is also advantageous, because it focuses more on the personal needs that influence motivation and self-regulation leading to self-actualization, and less on motivation towards goals or outcomes (Deci & Ryan, 2000). The purest form of self-determined action comes from intrinsic motivation, which is the motivation to engage in an activity for the pure enjoyment of the activity itself: no goals, and no outcomes (Ryan & Deci, 2000). Other motivational theories, such as achievement goal theory (Elliott & Dweck, 1988), attribution theory (Weiner, 2010), expectancy value theory (Wigfield & Eccles, 2000), self-worth theory (Covington & Beery, 1976), and self-efficacy theory (Bandura, 1977) tend to place the focus on

the task, and the motivational constructs that support and explain attainment or avoidance of the task. The focus in my research was on the personal factors that influenced learner motivation and what teachers can learn from these perspectives to guide their instructional practices. Self-determination theory provided an ideal framework for this research.

A primary assumption of self-determination theory is that individuals possess an innate desire to pursue their personal interests in order to actualize their human potential, that is, to achieve a sense of self (Ryan & Deci, 2002). This process is influenced by and within the individual, but also by and through interactions with others and the individual's broader social context. Thus, self-determination theory acknowledges the influence and integration of both humanistic and developmental theoretical frameworks, as well as behavioural and post-modern theories (Ryan & Deci, 2000). Furthermore, the theory posits that social contexts can both facilitate or undermine the individual psychological developmental process, such that one should not assume that growth and personality are given or pre-existing factors.

Self-determination theory posits three basic psychological needs that support and nurture effective psychological development: autonomy, competence, and relatedness. The positive interaction of these three basic needs supports individuals' personal psychological growth leading to self-determined behaviour and self-actualization (Ryan & Deci, 2000).

Autonomy, competence, and relatedness. Autonomy is defined as the “degree to which individuals feel volitional and responsible for the initiation of their behaviour” (Williams, 2002, p. 235; see also Weinstein, Przybylski, & Ryan, 2012). People tend to act more autonomously when they act out of personal interest or because the reason for acting is integrated with their own personal values (Ryan & Deci, 2002). Ryan and Deci emphasized the importance of the *perceived* nature of autonomy. An individual's behaviour can be internally or externally

regulated, but what determines an individual's degree of autonomy is whether the regulated behaviour is congruent with his or her personal values or is personally endorsed. Therefore, even externally regulated events (i.e., events prompted by someone else) may lead to autonomous action by an individual, because the purpose behind the action is congruent with the individual's values. This endorsement based on congruency of values is known as "internalization" (Ryan & Deci, 2002). Internalization of externally regulated behaviours occurs when individuals feel that they have control, that they have a degree of choice and freedom to engage without external coercion, and that they have a voice (Ryan & Deci, 2002, p. 18).

Competence is described as "the degree to which [individuals] feel able to achieve their goals and desired outcomes" (Williams, 2002, p. 235). This definition of competence is distinguished from the recently popularized use of the term competence in the educational sphere, which refers to an objective measure of someone having achieved a specific standard, or having attained a skill or ability. Competence as described in self-determination theory is related to the concept of self-efficacy described by Bandura (1977). Individuals continually try to increase their skills and abilities in various areas in their lives. In doing so, they increase their confidence, or "effectance" in that action (Ryan & Deci, 2002, p. 7). When individuals perceive a high level of competence or self-efficacy in a domain, they become intrinsically motivated to grow in that domain. In other words, they become more self-determined. By contrast, when individuals experience events that decrease their perceived competence, they become less intrinsically motivated.

The "functional significance" (Ryan & Deci, 2002, p. 12) of specific motivational contexts that either enhance or diminish perceived competence in an individual is important. Motivational contexts that are controlling in nature typically do not provide the necessary

feedback to support an individual's perceived competence, which in turn hinders intrinsic motivation. Furthermore, controlling contexts undermine autonomy, which negatively impacts intrinsic motivation.

Motivational contexts that tend to have an informational functional significance (e.g., providing positive constructive feedback after performing a specific task) results in greater intrinsic motivation (Ryan & Deci, 2002, p.12). Greater intrinsic motivation occurs because individuals who receive positive reinforcement experience greater perceived competence. They have been provided with information that helps them understand the nature of their actions. In addition, individuals are able to internalize such information resulting in a perceived internal locus of causality for their behaviours, thus supporting their autonomy.

Relatedness refers to the “extent to which [individuals] feel connected to others in a warm, positive, interpersonal manner” (Williams, 2002, p. 235). When individuals feel connected to others and feel that they are in a supportive and safe environment, they are more intrinsically motivated and display more self-determined behaviours. Ryan and Deci (2002, p.14), explained that although relatedness is one of the basic psychological needs for intrinsic motivation, it plays a supportive role for competence and autonomy. For example, a positive and trusting relationship between a teacher and student creates an environment for increased communication. Effective communication is a basis for providing effective feedback to learners, which, in turn results in greater perceived competence and higher intrinsic motivation in learners. Similarly, teachers who provide an autonomy-supportive environment enriched by positive interrelationships generate greater self-determined behaviour in their learners. When learners are immersed in a trusting and supportive learning community, where they feel safe and cared for, a greater sense of personal autonomy is fostered (Ryan & Deci, 2002).

Basic Theoretical Components of Self-Determination Theory

According to Ryan and Deci (2002) self-determination theory is the integration of a collection of smaller theories: cognitive evaluation theory, organismic integration theory, causality orientations theory, and basic needs theory. These theories are sub-theories that help to elaborate on and explain self-determination theory in more detail. I explain each of these sub-theories.

Cognitive evaluation theory. Cognitive evaluation theory focuses on intrinsic motivation and the factors that affect it. Cognitive evaluation theory examines the events that influence behaviours that arise out of personal interest to an individual, because the events are inherently interesting or bring personal enjoyment to an individual (Deci, Koestner, & Ryan, 2001; Deci & Ryan, 1985). In intrinsic motivation, individuals have little concern for external reward or contingent outcome. Cognitive evaluation theory demonstrates an individual's need for autonomy support and competence, and that the relative presence or absence of these two factors either supports or undermines intrinsic motivation (Deci & Ryan, 1985).

Ryan and Deci (2002) described two cognitive processes that influenced intrinsic motivation: perceived locus of causality and perceived competence. Perceived locus of causality referred to “the extent to which individuals perceive their own actions as a result of either external or internal reasons” (Turban, Tan, Brown & Sheldon, 2007, p. 2376). This cognitive process relates to autonomy such that when individuals perceive that the cause of their actions is internal to themselves they are acting autonomously, which then increases intrinsic motivation. Second, when individuals perform an action and perceive themselves to be competent in that action, their intrinsic motivation tends to increase. Any event or intervention that changes the

perception of causality into an external source or that negatively affects the perceived competence in an individual tends to undermine intrinsic motivation (Ryan & Deci, 2002).

Organismic integration theory. Organismic integration theory focuses on extrinsic motivational contexts or activities that are not perceived to be intrinsically interesting or of personal value. Individuals require external sources of motivation to facilitate engagement in an activity where the focus is more on the outcome of the activity as opposed to the enjoyment of the activity in-and-of-itself (Ryan & Deci, 2000).

Extrinsic motivation has often been thought to be in a dichotomous relationship with intrinsic motivation. Extrinsic motivation was considered to be a non-autonomous form of motivation and antithetical to developing self-determined individuals. However, Ryan and Deci (2000) posited that extrinsic motivation extended along a continuum, which ranged from fully externally regulated, nonself-determined behaviour to an integrated form of self-regulated or self-determined behaviour, similar to intrinsic motivation. In Figure 2.1, I show the extrinsic motivation continuum. Also included in this figure is amotivation, which is a complete absence of motivation to engage in an activity. Ryan and Deci (2002) suggested in this theory that it was possible for individuals to fully internalize externally regulated prompts. In other words, an individual could integrate an external regulation as part of his or her personal value system resulting in self-determined behaviour.

External regulation is the least autonomous form of extrinsic motivation on the continuum. This type of extrinsic motivation has an external locus of causality, meaning that the individual perceives that the origin for their action comes from an external source (Ryan & Connell, 1989). In this form of extrinsic motivation, individuals act in order to gain a reward or to avoid punishment.

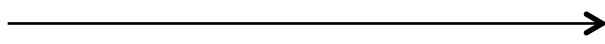
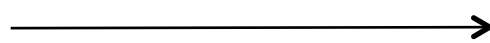
Behaviour	No Self-determination 					Full Self-Determination
Type of Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Type of Regulation	No Regulation	External regulation	Introjected regulation	Identified regulation	Integrated regulation	Intrinsic regulation
Locus of Causality	Impersonal	External Internal				Internal
Continuum of Self-Regulation		Controlled  Autonomous				

Figure 2.1. The self-determination continuum from amotivation to intrinsic motivation. Adapted from “Handbook of Self-Determination Research,” by E. Deci, and R. Ryan, 2002, Rochester, NY: University of Rochester Press.

Another form of extrinsic motivation is *introjected regulation*. Here, the regulated behaviour still has an external perceived locus of causality, but it has been partially internalized such that one sees the value of the action, but still acts out of fear of guilt, shame, or self-worth, not because of personal interest (Ryan & Deci, 2002, p.17).

In *identified regulation*, extrinsic motivation transitions from having an external perceived locus of causality to an internal locus. Individuals perceive that the source of action comes from within themselves (Ryan & Connell, 1989). Individuals see the value in an externally regulated act, identify with the purpose, and personally endorse it. In doing so, they feel more autonomous and act in a more self-determined manner even though the original source was external (Ryan & Deci, 2000).

The final type of extrinsic motivation on the continuum in Figure 2.1 is *integrated regulation*. This form of extrinsic motivation has the highest degree of autonomy. As with identified regulation, individuals have a perceived internal locus of causality, because they have

fully integrated and endorsed an external source of action as congruent with their own values resulting in *intrinsic-like* self-determined behaviour (Ryan & Deci, 2000, p.62). The initial regulation originates from an external source but has been internalized and integrated such that individuals feel autonomous in their action. This form of extrinsic motivation overlaps with and becomes difficult to distinguish from intrinsic motivation. What distinguishes integrated regulation from intrinsic motivation at a theoretical level is that the original source of regulation is external, and that the behaviours are performed to achieve an outcome rather than for pure enjoyment of the action itself (Ryan & Deci, 2002).

From an educational perspective, the organismic integration theory shifted educators away from the use of externally regulated, extrinsic motivational methods. This theory helped educators move toward the use of methods that would either foster intrinsic motivation to learn, or support an integrated regulation of extrinsic motivation (Baldwin et al., 2012).

Causality orientations theory. Cognitive evaluation theory and organismic integration theory focus specifically on the external or social factors that influence motivation. Causality orientations theory emphasizes individuals' internal motivational orientations. Deci and Ryan (1985) found that individuals responded in different ways to the same event. In other words, people tended to experience the same regulatory event in different ways. Deci and Ryan proposed three regulating behaviour orientations: *autonomy*, *controlled*, and *impersonal*. Individuals with an autonomy orientation “have a greater capacity to experience events as sources of information for initiating and regulating their chosen behavior and to maintain a higher level of self-determination and intrinsic motivation regardless of the objective properties of the event” (p.111). Such individuals gravitate toward opportunities that allow for greater choice and pursuit of individual goals and interests. Autonomously oriented individuals

experience external rewards as affirmations of competence rather than as requisite for regulation of behaviour.

Individuals with a controlled orientation have a greater preference for controls in their surrounding contexts that tend to regulate their behaviour through rewards, deadlines, or monitoring of progress. Such individuals exhibit a reduced degree of self-determined behaviour, prefer external rewards, but are able to develop high levels of competency through rule-following (Deci & Ryan, 1985, pp.157-159).

Individuals with an impersonal orientation have a tendency to perceive experienced events as having an external locus of causality and have a low perceived competence. They find most experiences to be amotivating because they believe that these experiences are beyond their control or too difficult, or because they perceive themselves to be incompetent (Deci & Ryan, 1985).

Knowing that specific external factors can influence intrinsic motivation and self-determined behaviours is inadequate. One must also understand that individuals respond in unique ways to motivational phenomena. Understanding these unique responses allows motivating agents to more reliably predict and choose appropriate motivational contexts that relate to an individual's causality orientation, which in turn supports his or her self-determination (Deci & Ryan, 1985).

Basic needs theory. The final sub-theory that contributes to the full understanding of self-determination is called *basic needs theory*. This theory elaborates on the understanding of the three psychological needs that form the basis for self-determination theory, autonomy, competence, and relatedness. The theory also explains how needs satisfaction relates to basic human well-being. In this theory, basic needs that are satisfied support well-being, and basic

needs that are obstructed impair well-being (Ryan & Deci, 2002, pp.22-23). Further, basic needs theory explains that positive well-being is associated with attainment of valued goals that meet basic psychological needs. Attainment of goals that one perceives as important but does not support one's basic needs may be an initial source of motivation, but in fact, such goals may negatively impact well-being, especially if they prevent one from satisfying basic needs (Ryan & Deci, 2000).

A Gallup Student Poll was conducted in 2009 (Lopez, Agrawal, Calderon, 2010), which focused on learner hope, engagement, and well-being. These three constructs have been shown to have a positive impact on learner outcomes including academic achievement, even when controlling for factors such as intelligence, prior academic performance, and self-esteem (Lopez et al., 2010). These poll data are relevant in the context of self-determination theory and its sub-theory, basic needs theory, because a relationship exists between the basic needs of autonomy, competence, and relatedness and the constructs of hope, engagement, and well-being.

Self-Determination Theory in Medical Education

This theory has had limited application in the medical education context to date (Kusurkar, Croiset, Mann, Custers, & ten Cate, 2012). In fact, Kusurkar et al. suggested that motivational orientations toward learning have either been an afterthought or an implicit component of curricular reforms in medical education, and that the focus in medical education has been on cognitive and metacognitive learning orientations. Recent reviews and commentaries in the medical education literature have brought to light the importance of focusing on motivation, and more specifically self-determined motivation, as a key aspect of curricular planning and improved learner outcomes (Kusurkar et al., 2012; ten Cate, Kusurkar, & Williams, 2011; Baldwin et al., 2012; Kusurkar, ten Cate, Asperen, & Croiset, 2011).

Williams' (2002) work introduced self-determination theory to health care and medical education contexts. Using self-determination theory in health care, Williams demonstrated that autonomy-supportive patient-doctor interactions resulted in improved patient care and positive outcomes in diabetes management, medication adherence, smoking cessation, weight loss, and alcoholism treatment compared with more controlling doctor-patient relationships.

Using self-determination theory in medical education contexts, Williams, Wiener, Markakis, Reeve, and Deci (1994) demonstrated that medical preceptors who supported learner autonomy (i.e., acknowledged student perspectives so that students felt heard, and encouraged students to take an active role in their learning by giving them opportunities to make choices) rather than controlling student learning could influence medical student residency choices. In other words, clerkship rotations that encouraged learners to be more self-determined resulted in learners choosing residencies in those specialties.

Williams and Deci (1996) demonstrated that learners who were in an autonomy-supportive learning environment when they were learning basic interviewing techniques, internalized the key values being taught during the module better than when they were in a non-autonomy supportive environment. The researchers also found that students in an autonomy supportive environment continued to practice these patient-centred values over the long term.

The published literature investigating the impact of self-determination theory in medical education contexts has been limited to date. Williams and Deci (1998) noted that because the findings across multiple non-medical education contexts (e.g., in elementary, secondary and higher education) were consistent, then they would also likely apply in medical education contexts. For example, students who perceived their instructors to be autonomy supportive showed more interest in the subject, perceived themselves as having greater competence, learned

better, and had better indicators of well-being. However, at the time of this study I found no specific medical education studies that examined these factors in detail.

Learner-Centredness as an Allied Construct

Self-determination theory approaches motivation from a person-centred perspective. Motivation to act or behave is determined by individuals' perceptions of their ability to act with volition, the degree to which they feel competent in their abilities, and the extent to which they see themselves as part of a larger whole or community of actors. The highest form of self-determined motivation is completely self-regulated, that is, an action carried out purely for the love, interest, or joy that that activity provides to an individual. External forces influence an individual's self-regulation, but what determines an individual's willingness to engage tends to be influenced by her or his perception and degree of internalization of external forces on personal autonomy, competence, and relatedness.

Learner-centredness is a key construct for self-determination theory in an educational context. Just as self-determination theory has a person-centred approach to motivation, learner-centredness shifts the focus of teaching and learning away from the teacher to the student. This shift does not mean that teachers should no longer be responsible for student learning, but it means that in the teaching/learning process the learners should be at the focal point. Students need to be active participants in their learning. Learner-centredness is achieved in several ways: (a) by offering choice, greater control of learning, and engaging personal interests; (b) by providing feedback to reinforce growing knowledge and build personal competence; and (c) by building a strong community of learners, which includes the teacher, to create a trusting and safe learning environment (McCombs & Miller, 2007).

In essence, the learner-centred classroom fosters a self-determined student, because learner-centredness and self-determination share common core elements. When teachers focus on students as individuals with different learning needs, they begin to realize that adhering to only one approach to teaching is not adequate to meet the diverse needs of learners (McCombs & Miller, 2007). Teachers who embrace a learner-centred approach create opportunities for learners to approach learning in ways that meet their individual needs, and in the process give more control and choice to their learners. From a self-determination perspective, learner-centred teaching practices are autonomy supportive.

Learners who perceive that they have control over their learning and are responsible for their learning become more motivated to engage in learning. Greater motivation occurs in contexts where learners may not even be inherently interested in the topic being taught. Autonomy-supportive approaches, in which teachers provide an element of choice or control and by engage learner interest by demonstrating the relevance of the topic, motivate even disinterested students to participate, because students integrate that learning into their personal value system as interesting, useful, or worthwhile (Reeve, 2002).

The key point is that learners are motivated not out of guilt or force but because they have been shown or have personally discovered that the subject being taught is consistent with their goals or values (Reeve, 2002). This integrated form of motivation is effective. If the motivation is of a higher quality, then learners engage in deeper and more lasting learning, exhibit greater flexibility in thinking, and show greater creativity, which all lead to higher academic achievement (Reeve, 2002; Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013).

Learner-centred classrooms support the cognitive and metacognitive development of learners (McCombs & Miller, 2007). Encouraging students to reflect on their learning and

experiences, and to grow and revise their understanding supports the development of their knowledge, skills, and attitudes. However, ensuring that the reflective process is effective and leads to relevant change involves provision of continual, timely, and constructive feedback throughout the learning process (Archer, 2010). When learners are not made aware of errors in their thinking, skill development, or judgment, and do not receive constructive, formative feedback, they experience negative learning outcomes. Teacher-centred practice focuses on summative assessment and learning outcomes. Outcomes inform the teacher and learner that the student has either achieved or failed to achieve a goal. Learner-centred approaches do recognize the importance of summative assessment; however, a greater emphasis is placed on formative assessment and feedback, because they support learner growth, development, and learning (McCombs & Miller, 2007, p.62).

From a motivational perspective, provision of formative feedback is an essential element, because it helps build the perception of competence. When students are given feedback, support, and guidance during their learning, they perceive within themselves the ability to accomplish whatever task they have before them (ten Cate et al., 2011). This perception of growing competence is motivating for learners and it encourages them to seek new learning opportunities, because learners experience a greater sense of effectance in their actions (Ryan & Deci, 2002).

Another key principle of learner-centred teaching relates to the learning context or the environment in which the learning occurs (McCombs & Miller, 2007). The most positive and effective learning environment is one that nurtures positive relationships among learners and between the teacher and learners. In such an environment, learners see themselves as part of a community, which in turn builds trust and allows students to feel safe to explore, question, seek and provide feedback, and communicate ideas, and it demonstrates that they have control in their

learning (Reeve, 2002). These learner-centered constructs are consistent with the constructs of self-determination.

A teacher-centred learning environment focuses on hierarchy of relationships and pays less attention to the individual learning needs of each student but rather prioritizes curriculum delivery efficiencies. The consequence is that students tend to become disengaged with their learning and demotivated, because they feel that they have little control of their learning, that their opinions are not being acknowledged, and that their perspectives are not being considered. They do not feel supported and secure enough to express their learning needs (Reeve, 2002). A learner-centred classroom, like self-determination theory, places more control for learning into the hands of the learner, where the role of the teacher becomes that of the guide to provide support, feedback, and positive relationships that support the growing autonomy of the learner (McCombs & Miller, 2007).

Learner Engagement as an Allied Construct

Learner engagement is described as “the intensity and emotional quality of students’ involvement during learning” (Reeve, 2002, p. 194). Dunleavy, Willms, Milton, and Friesen (2012) elaborated on engagement and subdivided it into two broad categories, engaged in school and engaged in learning. To be engaged in school meant to actively participate in the social and institutional aspects of school life. To be engaged in learning was to have a “serious emotional and cognitive investment in learning” (Willms & Friesen, 2012, p. 2). All these authors have essentially given the same definition for engagement for learning. Engagement is relevant for my research project because of its emphasis on learning, and because through self-determined motivation this form of engagement thrives (Reeve, 2002). From a self-determination theory perspective, social engagement has a role in motivation because relatedness plays an important

role in supporting self-determined motivation; however, the social element has an impact on other non-academic aspects of school life, which is not the focus of my research.

Learner engagement is an important allied construct for self-determination theory because engagement is a physical, outward sign of the level and quality of motivation of learners (Reeve, 2002, p.194). Learners with a more internalized and integrated form of motivation show outward signs of engagement such as: paying attention, putting in effort, participating in activities, and persisting in the face of challenge. Learners' emotional tone is expressed as interest, enthusiasm, happiness, and absence of anxiety or fear. Reeve suggested that this outward sign of engagement served as a proxy for the quality of motivation in learners.

Actions that teachers can take to support learner engagement come through their support for learners' basic psychological needs. First, teachers support learner engagement when they are autonomy supportive. Autonomy supportive actions include: spending time listening to students, demonstrating relevance to build interest, giving time for independent work, expressing empathy and making perspective-taking statements, guiding students in problem solving as opposed to simply providing answers, giving fewer directive statements, providing constructive feedback, and praising student mastery as opposed to focusing praise on the student themselves (Reeve, 2002, pp. 185-188). When learners perceive greater autonomy, they tend to engage whole-heartedly in the learning.

Second, teachers support engagement by supporting greater perceptions of competence within learners. Perceived competence is supported, in combination with autonomy supportive actions, by establishing clear expectations, incorporating appropriately challenging tasks, and providing constructive and informative feedback (Reeve, 2002, p.193). These actions help learners realize that they are capable of achieving the task or goal. A common reason for a lack

of motivation in learners is that they do not feel that they are able to accomplish a task. Creating tasks with expectations that are not realistic or at a level beyond learners' current abilities, and providing little feedback during the learning process enable these perceptions related to lack of ability. Reeve (2002) explained that teachers must ensure that learning tasks are achievable with appropriate effort and that support and feedback are readily available to foster the learners' perception of competence, and must ensure that more intrinsic forms of motivation are available thereby fostering more engagement in the classroom.

Moreover, teachers facilitate learner engagement by building positive relationships with and among learners. When learners perceive that a teacher is dedicating time and attention to support their learning, and when they believe that a teacher cares about their success, learners feel safe and happy in their learning environment (Reeve, 2002). A sense of trust develops between teacher and learner and among learners, which in turn fosters greater participation, cooperativeness, and communication, which are all expressions of high levels of motivation (Reeve, p.188-189).

The Gallup Student Poll Technical Report on student hope, engagement, and well-being emphasized the importance of these three elements for learners and their academic success (Lopez et al., 2010). Learners with higher levels of hope (i.e., "ideas and energy for the future," Lopez et al. p. 5), who felt engaged (an expression of motivation), and experienced well-being, ("how we think about and experience our lives," p. 8) achieved higher levels of academic and personal success than if they were in learning environments that did not provide these aspects.

Creating a learner-centred environment where the learner is fully engaged is essential for enhancing learning. These engaging environments can be achieved by establishing a context where learner autonomy is supported, where appropriate instructional structures are in place to

nurture perceptions of competence, and where strong group relationships create a solid network of cognitive, social, and emotional supports (Reeve, 2002). What does not appear to be well understood, particularly in the context of medical education where one often presumes that students are highly motivated regardless of what a teacher does or does not do in the classroom, is the medical student perspective about his or her self-determination in medical school. A better understanding of this perspective could inform the practice of medical educators and help to create learning environments that are more intentionally designed to support the basic psychological needs of the students.

Conceptual Framework

In Figure 2.2, I illustrate a conceptual framework for my literature review. The state of medical education teaching strategies is currently shifting focus toward supporting self-determined medical students, by supporting learner-centredness and autonomy, learner competence, and building strong relationships. Teachers in medical school are focusing more on ensuring that the content taught to medical students is relevant to clinical medicine, appropriately integrated across courses and across years throughout the curriculum, and is taught at the appropriate level for students.

The quality and extent of self-determined motivation in learners relies on the extent to which learners endorse the teaching strategies and the content taught using these strategies (Ryan & Deci, 2000). Endorsement here refers to a student's experience of congruence between external regulations and personal values or goals, such that the external regulations become internalized as one's own.

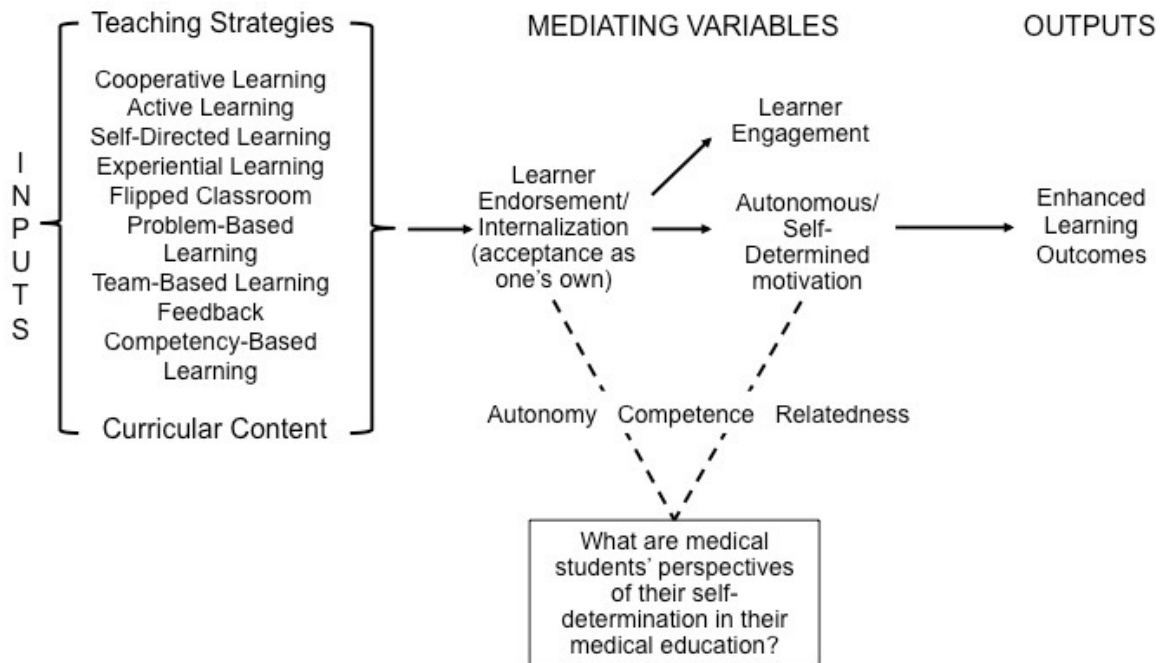


Figure 2.2 Conceptual framework for my literature review. Various teaching and curriculum content management strategies have been used in medical education with the goal of supporting learner self-determined motivation and engagement. A key element in establishing self-determination involves fostering internalization or learner endorsement of the activities as valuable and relevant. Self-determination theory posits that autonomy, competence, and relatedness are the basic psychological needs that must be fulfilled in order for learners to endorse such externally regulated activities, and experience self-determination. This framework does not apply to context where a learner has existing internally regulated motivation (i.e., the individual is self-determined). The dashed line indicates the connection between my research question and this process. The arrows indicate linearity in the process, which is appropriate although the process may be more iterative and cyclical in nature at times. Learner engagement is outward sign of learner motivation (Reeve, 2002). Previous self-determination theory research in education has demonstrated that increased learner self-determination has produced enhanced

learner outcomes including deeper learning and improved academic performance (ten Cate, Kursurkar, & Williams, 2011).

When learners endorse the teaching strategies employed and content conveyed, they tend to experience high quality self-determined motivation. Reeve (2002) explained that the behavioural expression of intrinsic motivation is student engagement, which ultimately leads to enhanced learning outcomes. My research sought to explore medical students' perspectives of their self-determination in their medical education, because the *personal* endorsement (i.e., acceptance of an external regulation as one's own) was a core component of self-determination.

Summary of Chapter 2

Many of the approaches to teaching and learning in medical education are shifting, at least at a theoretical level, toward supporting the basic psychological needs of students, and are therefore consistent with principles of self-determination theory. Learner-centredness, self-directed learning, case-based learning, (e.g., PBL, TBL, less-structured case discussions), flipped classrooms, and experiential learning all place more of the responsibility for learning with learners within in a more authentic context. These authentic contexts support learner autonomy by providing them more choice to direct their own learning, and by maximally energizing learner interest.

Medical schools are also currently placing greater emphasis on provision of effective feedback. Educational methods such as competency-based learning, active learning, cooperative learning, PBL, and TBL all support learners' needs for competence, whether it is through direct supervision by an experienced preceptor or through discussion and elaboration with peers.

Activities that support learner-to-learner interaction in a positive and academically supportive context facilitate relatedness among learners, which enhances self-determined

motivation. Learner to preceptor relatedness is also important for driving autonomous motivation. When learners have positive and trusting relationships with peers and preceptors, learners engage more fully in learning and lines of communication open for provision of feedback and for seeking support for learning. Positive relationships ultimately support learner autonomy because learners gain the necessary information to make choices, and they are supported in the choices they make.

I have presented how these teaching methods support self-determined motivation at a theoretical level. However, from a medical education perspective, educators do not clearly understand medical students' perspectives about their self-determination in their education. My research aims to explore medical students' perspectives.

In Chapter 3, I describe the methodology, methods, and study design that I used to help develop a better understanding of medical students' perspectives of their self-determination in their medical education.

CHAPTER 3: RESEARCH METHODS AND METHODOLOGY

In this chapter, I discuss the methods that I used to address my research questions and fulfill the purpose of my research. To reiterate, the overall purpose of my research was to examine medical students' perspectives of their self-determination in the medical education. Self-determined behaviour is dependent on fulfillment of three basic psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2002).

The research questions extended from this purpose and the definitions of autonomy, competence, and relatedness described in Chapter 2 (see Figure 3.1):

1. What were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?
2. What were medical students' perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?
3. What were medical students' perspectives of relatedness with their teachers and what was the impact on their learning?

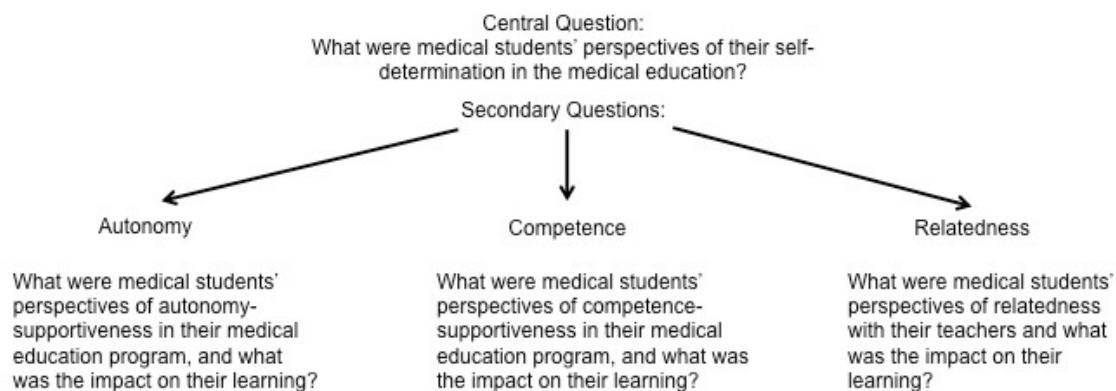


Figure 3.1 Research question framework. The central question of my dissertation research and the specific secondary questions that support the central question.

I also discuss the theoretical underpinnings that supported the methodology for my study. I then describe my methods and the design of the study as guided by my research

questions and methodology. In this chapter, I also describe my plan for collecting and analyzing the data once collected. I describe how I sought to ensure the trustworthiness of methods I used and the data collected.

Theoretical Underpinnings for Study Methodology

The theoretical underpinnings that guided my methods came from a modified participatory research framework. In participatory research, the focus of the research is not “on” individuals, but rather “with” individuals. The epistemological assumption in participatory research is that individuals are experts in understanding their own experiences, and that their knowledge is valuable and necessary for their construction of new knowledge related to phenomena that have impacted their lived experience (Eade, 1997; Kemmis & McTaggart, 2005). Essentially, participatory research transfers the research process and knowledge creation back to individuals or a community of individuals, and empowers these participants and builds their capacity to effect change through practical solutions (Cargo & Mercer, 2008; Cornwall & Jewkes, 1995). The role of the researcher becomes that of facilitator and collaborator in the process of knowledge creation.

I also used a modified action research epistemological framework to guide my research. The purpose of action research is to reflect on and investigate an area of practice and to effect change in that area as a result of the investigation (Carr & Kemmis, 1986). A focus of action research is on critical reflection as a source for developing areas for systematic investigation of practice or personal improvement. The result is a continuous spiral of critical reflection, investigation, and change (Kemmis & McTaggart, 2005). Action research tends to focus on individual practice and the related values, assumptions, and biases that an individual holds. However, because many actions take place in a social context, actions have an impact on others

in a group. Therefore, action research is often a social process where individuals can develop a better understanding of their practice by uncovering personal biases, assumptions, and values through interaction with participants.

In this dissertation research, I engaged medical students across all four years of an undergraduate medical degree program to explore their perspectives about autonomy-supportive environments, competence-enabling practices, and relatedness and how these three elements impacted their motivation to learn. Consistent with the purpose of action research, the information gathered was designed to help to inform my knowledge and understanding of medical student motivation. With these new insights, I hoped to change my own teaching practice, and encourage others to do likewise, in order to support and facilitate more self-determined motivation in the medical students.

Methods for this Study

In this section, I present the methods for this study, guided by my research questions and methodology. I begin with a brief overview of the setting to provide context to the study. I follow it with a description of the basic organization of the study and a description of the design.

Institutional context for my study. As indicated, this study involved medical students across all four years of an undergraduate medical education program leading to a medical doctorate degree at medium-sized Western-Canadian medical school. The first year of the medical education curriculum introduced students the biomedical science foundations of medicine. The other major course in the first year was an introduction to clinical skills. This course taught the students about and allowed them to practice the skills of history taking, communication, and physical exams. In the second year of medical school, students began their clinical systems course, which taught them an approach to the diagnosis and management of

patients with various diseases. These students also continued to develop and advance their clinical skills. In the third and fourth years, students entered clerkship, where they participated in the clinical management of patients on hospital wards, the emergency department, outpatient clinics, and the community.

Organization of Study: Research Design

In this section, I describe the design of the study and the methods that I used. I addressed the research questions of this study in two phases: an online survey phase, and a large-group Word Cafe conversation phase. In each phase, I focused on gathering information from participants to identify their perspectives on the three basic needs of self-determination theory: autonomy, competence, and relatedness. I was also interested in the extent to which individuals perceived their self-determination to be promoted or hindered within their medical education.

Phase I: Participant Surveys

In the first phase of the study, I invited students in all four years of the undergraduate medical program to participate in a broad survey that consisted of three validated self-determination sub-surveys. I emailed the participants a request to participate in the survey, and the request included a link to the University of Saskatchewan Fluid Survey site, which contained the sub-surveys. The first sub-survey included demographic information about gender, year in medical program, area of study or degrees held before medical school, and the educational site for medical training. In the second sub-survey, I invited students to complete the General Causality Orientation Scale (GCOS; Appendix A). This scale provided a measure of students' baseline motivational orientations: autonomous, controlled, or impersonal (*autonomously* orientated students self-initiate, seek activities based on interest, and take responsibility for their learning; *control* oriented students depend on incentives and others' expectations for their

motivation; *impersonally* oriented students believe that most decisions and situations are beyond their control, and thus they experience little motivation; Deci & Ryan, 1985).

The GCOS has 12 vignettes and 36 associated questions (Deci & Ryan, 1985). The vignettes propose common social or academic scenarios followed by autonomous, controlled, or impersonal options from which to choose. These options are shown on a 7-point Likert scale, where students select the degree to which each motivational orientation represents them in each scenario. Each orientation then has a subscale, which is summed. The totals in each subscale indicate the relative weighting of that orientation for that individual. Deci and Ryan (1985) demonstrated the construct validity and internal consistency of this survey. The Cronbach alpha values for the three orientations were .74, .69, and .74, respectively. Gathering this information from medical students allowed me to gain insight into the general causality orientation of the medical students who participated. It allowed me to determine if there were differences across the four years.

For the third sub-survey of Phase I, I invited the students to complete the Learning Climate Questionnaire (LCQ; Appendix B), which measured the degree to which students perceived their teachers to be autonomy supportive (Williams & Deci, 1996). There were 15 questions, all with a 7-point Likert scale. The answers to individual questions were averaged. One question was negatively worded and therefore was reversed before being included in the average. Williams and Deci measured the internal consistency with a Cronbach's alpha reliability of .96.

Teachers play a significant role in supporting learner autonomy, which goes beyond the teaching strategies they choose, and the content they deliver. How they interact with students, how they listen to learners and create a safe environment for learning, and how they build

confidence in their learners are all ways that teachers support autonomy in learners. I explored the medical students' overall perceptions of this autonomy-supportiveness of their teachers across the four years of medical school.

The fourth sub-survey of Phase I was the Learning Self-Regulation Questionnaire (LSRQ), which measured reasons why students participated or engaged in their courses (Williams & Deci, 1996). Thirteen questions were written as either autonomy-supportive statements or controlled statements and the students responded on a 7-point Likert scale. The controlled score was then subtracted from autonomous score to arrive at the relative autonomy index (RAI). Higher RAI's were predictive of better conceptual learning, higher teacher ratings of competence, higher student satisfaction, and better student well-being (Williams & Deci, 1996). The alpha reliabilities for the autonomy and controlled subscales were .78 and .70, respectively. The purpose of LSRQ was to explore the relative degrees to which medical students engaged in their learning for either autonomous or controlled reasons.

For each sub-survey, I invited students to provide written comments, which allowed them to expand on their answers and to elaborate on their experiences related to the surveys. These written comments helped me to understand the context related to the students' survey responses.

Phase II: World Café Event

The purpose of this second phase of the study was to invite a cohort of up to 100 medical students from the Saskatoon and Regina medical education sites across all four years of the undergraduate medical program to engage in participatory-style conversational processes known as World Cafés. I organized World Café events in Saskatoon and Regina. The central purpose of these face-to-face gatherings was to explore students' perspectives of their self-determination in medical school guided by the three basic psychological needs: autonomy, competence, and

relatedness. I also explored the students' perspectives about the impact that either the support or hindrance of these basic needs had on their learning motivation.

Description of World Café process. Juanita Brown and David Isaacs (2005) created the World Café process. This conversational process was based on the idea that the most engaging, important, and actionable conversations often originate during meals. Brown worked as a community organizer with Cesar Chavez during the farmworkers movement and discovered that engaging conversations among workers over a meal was an empowering activity that could lead to change. From this initial context, Brown discovered that the World Café approach could be applied to any social environment with the key determinant to success being the establishment of conversations that matter related to questions that matter:

The World Café, [is] a simple yet powerful conversational *process* for fostering constructive dialogue, accessing collective intelligence, and creating innovative possibilities for action, particularly in groups that are larger than most traditional dialogue approaches are designed to accommodate. (Brown & Isaacs, 2005, p. 3)

The World Café is a process of seven principles that facilitates conversation, creates a community of inquiry, gives individuals a voice, helps to build a collective knowledge, and supports development of patterns of innovative thought from individual pieces of insight (Brown & Isaacs, 2005). These principles are intuitive, but by placing explicit attention on each principle, it creates the ideal setting for quality discussion and idea generation. I describe how I applied these principles below in my study:

1. Setting the context for the dialogue helps participants to know the guidelines for the discussion in order to maximize the collaborative nature of the discussion and support meaning making for the group. Structure and general understanding of the purpose of the conversation

helps to build dialogue. Elements of setting the context that I used in my study included: (a) developing an understanding of the current situation, which helped to build relevance for participants; (b) establishing the constructivist assumption that individuals and communities, through their experiences, were the key source for knowledge and understanding; (c) establishing who the participants should be, because the voices at the table had an impact on the conversation; and (d) clarifying the format for the conversations. The World Cafe method was unique and although well suited for creative and engaging conversation, if participants were not oriented to the format it would have affected the quality of the conversations.

2. During the World Café event, I established a welcoming space for participants. This principle was modeled after the notion that some of the most engaging, empowering, and knowledge-forming conversations developed in cafes where people could come together in an informal setting and discuss issues that mattered to them (Brown & Isaacs, 2005). The space was set up like a café. Participants gathered in smaller more intimate groups around small café tables, which fostered greater participant contribution and communication. I played music in the background. I attempted to create a hospitable environment by migrating throughout the room during the conversations and engaging in process to stimulate discussion and integration of ideas without contributing to the content of the conversation. I provided a “home-cooked” meal for the participants. These actions may seem subtle, but they supported an open and relaxed environment, which ultimately helped facilitate conversation by eliminating the pretenses that may arise from more formal contexts (Brown & Isaacs, p.76).

3. During the World Café, I explored questions that mattered to the participants, which helped to engage them better, so that they were able to think about the subject with clarity. Participants were also able think more creatively about the subject. Clear and relevant questions

posed to the group in the context of a welcoming setting, create an ideal environment for collective discovery (Brown & Isaacs, p. 92).

4. During the Café conversations, I ensured contribution from all members. The World Café process is undergirded by the notion of collective intelligence – that many minds working together are greater than one mind alone (p. xii). Therefore, the thoughts and ideas of each individual within the group are valuable and contribute to greater knowledge and understanding. Brown and Isaacs (pp. 102-105) suggested that a lone statement from an individual could spark new ideas or help to address issues with which a group was struggling. I reminded the participants that there were no content experts; rather, everyone was an “expert” regarding their own experiences and they were invited to share this expertise. I explained that equal participation was not the focus, instead, I emphasized meaningful *contribution*, which shifted the focus away from individual expression of ideas, to more of a giving of one’s self (p. 99).

I encouraged participant engagement by keeping the groups small (i.e., 4-5 people). I reminded more gregarious members to keep their contributions succinct and to allow others to engage. I encouraged group members to contribute using non-verbal methods (i.e., drawing pictures, drafting the key points of the discussion, and making summary statements). During the World Café process, participants transferred to new groups, where each member from an old group reported to the new group the thoughts and ideas from their original group, all of which encouraged contribution.

5. During the World Café, I emphasized the importance of building connections among the many ideas through “cross-pollination” of knowledge created during conversations (Brown & Isaacs, 2005, p.117). Cross-pollination of ideas was accomplished in two ways; first, by having individual group members transfer to other tables throughout the conversational process,

and second, by encouraging participants to identify connections among ideas as people transfer from group to group. Through cross-pollination, the ideas of the group and the whole, began to supersede the ideas of individuals, thus facilitating and building the collective knowledge:

The World Café process is not simply an interesting vehicle for the random emergence of collective intelligence. Rather, it embodies a simple but intentional architecture of engagement—creating the conditions for the arrival of serendipitous discoveries, new patterns of meaning, and the “voice in the center of the room ...” (Brown & Isaacs, 2005, p.117)

I concluded each session with a large-group discussion to further support cross-pollination and connection of ideas by allowing the participants to emphasize common issues and to build on these issues.

6. During the World Café conversation, I facilitated effective conversation by ensuring effective listening. Gregarious people tend to speak more often when they are engaged and excited during conversations, which can result in reduced diversity of ideas and less integration of ideas because fewer people are engaged in the process (Brown & Isaacs, 2005, p.129). Slowing the conversational process, creating opportunities for all group members to speak and to be heard, and emphasizing the importance of listening to one another establishes the ideal environment for collective intelligence.

Quality conversation is fostered when individuals know that they have an opportunity to speak without interruption, when they know that they do not have to fight to get a chance to speak, and when they receive full attention when they speak. A fuller understanding of the speaker’s ideas is ensured when the other group members are taking the time to engage in reflective listening by writing ideas down that they find interesting or important, and by giving

deeper consideration of the ideas being presented. Quality conversations also facilitate better integration of all the ideas that are presented because when people pause and think about what has just been said, they are able to make connections, and challenge assumptions and previously held ideas that may never have been challenged before that moment of active listening. Anne Doshier (as cited in Brown & Isaacs, 2005, p. 128) referred to this as “‘gathered attention’ – the capacity both at the individual and the collective level to engage in the type of listening that enables new patterns of meaning and innovative possibilities to be called forth in conversational exchange.” Brown and Isaacs (p. 128) explained that:

[Gathered attention] moves beyond listening to other people speaking, and simultaneously engages our ability to listen with each other for connections and patterns of meaning as well as for new insights or deeper questions that emerge *in the space between* different perspectives. (Brown & Isaacs, 2005, p. 128)

Creating an environment that enables individual reflection, either with the arrangement of a contemplative physical space, or by incorporating brief moments of personal reflection supported by reflective questions becomes a critically important action.

These principles are essential for the successful coordination of the World Café process. These principles are not hierarchical or linearly organized such that the first principle needs to be accomplished before the second principle can be started. They are all equally important to the process and each is mutually dependent on the other. Each principle helps to facilitate dialogue, cross-pollination of ideas, and build the collective intelligence connecting individual ideas.

World Café process design. I invited up to 100 medical students from the Saskatoon and Regina medical education sites across all four years of the undergraduate medical program at the University of Saskatchewan to participate in one of two World Café events. One World Café

was held in Saskatoon (n = 46) and the other in Regina (n = 18). The focus of the discussion was guided by the purpose of the study, which was to explore medical students' perspectives of their self-determination in medical school. From this larger question, three sub-themed questions arose:

1. What were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?
2. What were medical students' perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?
3. What were medical students' perspectives of relatedness with their teachers and what was the impact on their learning?

Given the nature of these questions and the nature of the World Café process, I arranged these two events as evening retreats. They were held in the evening to accommodate the participants' schedules. I provided dinner, nutritional snacks, coffee, tea, and water to participants (see Table 3.1 for the World Café agenda).

The World Café event followed a similar format at the Saskatoon and Regina sites; therefore, the description of the events that I provide below refers to both sites. Where elements were different, I describe those differences. The World Café event in Saskatoon occurred on a Wednesday evening in April and the Regina World Café occurred on the following Thursday evening. Prior to the World Café events, I sent a general email invitation to participate to all medical students (see Appendix D – Ethics Application). For those students who volunteered to participate, I sent a second email that contained logistical details related to the event, a briefing document that contained simple definitions relevant to self-determination, and questions on which the students were asked to reflect.

Table 3.1

Schedule of Events for World Café process

Time	Activity
5:15 – 5:30pm	Welcome and Introduction to World Café Process
5:30 – 5:45pm	Small Group 1 – Introductions, perspectives of Autonomy and impact on learning
5:45 – 6:00pm	Small Group 2 – Introductions, summaries and continued discussion
6:00 – 6:15pm	Large Group De-brief – Summary of Autonomy
6:15 – 6:35pm	BREAK - Dinner
6:35 – 6:50pm	Small Group 2 – Perspectives of Competence and impact on learning
6:50 – 7:05pm	Small Group 3 – Introductions, summaries and continued discussion
7:05 – 7:20pm	Large Group De-brief – Summary of Competence
7:20 – 7:35pm	Small Group 3 – Perspectives of Relatedness and impact on learning
7:35 – 7:50pm	Small Group 4 – Introductions, summaries and continued discussion
7:50 – 8:05pm	Large Group De-brief – Summary of Relatedness
8:05 – 8:15pm	BREAK
8:15 – 8:35pm	Small Group 5 – Recommendations
8:35 – 8:50pm	Large Group De-Brief – Summary of Recommendations
8:50 – 9:00pm	Large Group – Wrap-up

The purpose of the reflection questions was to familiarize the students with the basic terminology related to self-determination theory, which in turn would allow me to be more efficient with the time available.

Prior to beginning the event, all students signed a participant consent form. All volunteer participants gathered in a room with several small sized tables. Each table was covered with large sheets of paper to serve as the medium for the participants to write and draw points and items regarding the conversations. I provided coloured markers to the participants. I set the tables to accommodate four or five students. Because of the uneven number of participants, some of them elected to sit in groups of three or five. I was prepared to be flexible and let groups form organically, with two important exceptions: I did not allow groups of more than five people, nor did I allow groups with just two people.

The purpose of a World Cafe is to facilitate conversation and the generation of ideas from a gathering of people; therefore, a group of two was too small to actually allow for effective building of ideas. My decision to keep the groups to five or less was both structural and functional. From a structural perspective, the tables could not accommodate more than five people without ultimately having one member feeling physically removed from the table. I asked the students to write their ideas on the table sheets, so having unrestricted access to the table was important. From a functional perspective, in groups of more than five softer-spoken participants can feel left out or less able to involve themselves in the conversation. I did not want to create an environment where participants felt that they could not contribute. Moreover, the experiences of all participants must be collected in a positive environment free from inhibition in order to gather robust information. Four participants per table provided that intimate context and greater opportunity for all participants to get involved in the conversation.

I provided the participants with a brief welcome, orientation, and introduction to the event. I described how the World Café process worked, what their role was as participants in the process, and the various stages in the process. I also provided a schedule of events for the evening. At that time, I opened the floor to the participants to ask any questions for clarification before beginning the process.

I first describe the general organization for the small group discussions. Further, given the composition of the Saskatoon and Regina cohorts, I used a different organizational approach for the small groups, which I describe below. I then provide a description of the specific World Café conversational themes.

The participants discussed each of the basic needs for self-determination. For each basic need, I organized two rounds of conversations, and each round lasted 15 minutes. Between each round, the participants switched groups. One participant remained at their original small group table to act as a representative and the other three participants moved randomly to other groups, and each was asked to disperse to a different table to maintain diversity within the groups.

Once the new group of four participants was seated, the representative of that table initiated the subsequent 15-minute discussion with a brief overview of the discussion that occurred at that table. The new members then provided a brief summary of key ideas generated at their respective tables. Once the summaries were completed, the group continued the dialogue about their experiences of autonomy.

Following the second small group discussion, there was a 10-minute large group debriefing about the basic need that was discussed. During this debriefing, I asked the participants to share summary statements regarding their discussions, and I recorded these summaries. Breaks were scheduled throughout the World Café event.

At the Saskatoon World Café event, participants who were in the pre-clerkship phase of the medical program were asked to sit with other pre-clerkship students, and the clerks were asked to sit only with other clerks. The experiences between the pre-clerkship and clerkship were sufficiently different to warrant separation, and the number of clerkship students was large enough to allow for robust conversations. Because the number of participants was smaller at the Regina World Café event, I used a different approach for the organization of groups. For the conversations related to each basic need, I started by grouping the clerks together for the first round of conversations, then when the students switched groups for the second round of conversations, I asked the clerks and pre-clerkship students to amalgamate. By keeping the groups separate for one round of conversations, the students were able to discuss issues relevant to their unique educational context. Further, by mixing the two student groups, I ensured effective cross-pollination and diversity of ideas.

The first stage of dialogue for the small groups was to discuss autonomy. I asked the participants to discuss the first question, “What were the experiences in your medical education that supported and hindered your autonomy? I also asked them to consider and discuss how these experiences impacted them as learners. To facilitate the conversations, I provided a basic definition of autonomy so that the participants shared a common understanding of the term. The participants discussed the topic and wrote their ideas for two rounds, switching groups after the first round. The small group discussions were followed by a large group discussion. During the large group discussion, the participants shared common or important discussion themes that arose from their groups. After the first stage of discussions on autonomy, a dinner recess occurred.

In the second stage of small group dialogue, I asked participants to discuss competence, the second basic need of self-determination. Participants began that session in their most recent small groups formed during the first session. I asked the participants to discuss the question, “What were the experiences in your medical education that supported or hindered your feeling of competence?” I also asked them to consider and discuss how these experiences impacted them as learners. Again, I provided a basic definition of competence so that the participants shared a common understanding of the term. The remainder of the second stage of dialogue followed a similar structure to the first stage.

In the third stage of small group dialogue, I asked participants to discuss relatedness, the third basic need of self-determination. Participants began that session in their most recent small groups formed during the second session. I asked the participants to discuss the question, “What were the experiences with teachers/preceptors in your medical education that supported or hindered your feeling of relatedness?” I also asked them to consider and discuss how these experiences impacted them as learners. I provided a basic definition of relatedness so that the participants shared a common understanding of the term. The remainder of the third stage of dialogue followed a similar structure to the first and second stages. Following stage three, a nutrition break occurred.

For the final session of the World Café, participants gathered in small groups to discuss what actions or changes they would recommend to support the three basic needs of learners in the medical program based on the conversations throughout the entire café process. This dialogue lasted 20-minutes, and was followed by a 15 minute large group de-briefing.

Following the final session, I provided a 10-minute large group wrap-up session for the entire World Café event. I summarized the major themes and ideas from the four sessions. I

gave the participants the opportunity to ask questions, clarify, or expand on any of the presented ideas.

Quantitative and Qualitative Analysis

The methods and design of this study were guided by the purpose and the research questions (which stemmed from the purpose). The three phases of this study addressed the research questions by either providing information directly in response to the research questions, or by providing relevant contextual information, which helped to understand and interpret the findings. In Table 3.2, I present a matrix that summarizes the research questions and indicates the methods that address each research question. At the time of the organization of Phase I, I was not aware of a questionnaire for competence support, which is why there is no representative questionnaire in Phase I. At the time of carrying out my methods, I was not aware of validated questionnaire for basic need of competence. However, after completion of my study and subsequent literature review I did identify validated SDT questionnaires focused on competence.

Table 3.2

Research Question and Methods Matrix

Research Questions	Method	
	Phase I: Survey	Phase II: World Café
Autonomy Support/Hindrance	X	X
Competence Support/Hindrance		X
Teacher Relatedness	X	X

In Phase I of this study, I collected demographic information of participants as well as the scores on three self-determination motivation surveys: the GCOS, the LCQ, and the SRQ-L. For the demographic information, I determined frequency data for all parameters. All quantitative data were analyzed using SPSS v.22.

For the GCOS, I performed a reliability analysis using Cronbach's alpha for each subscale, and the values were: autonomy (.67), controlled (.58), and relatedness (.71). I compared gender and education site for medical training with each GCOS subscale mean score using independent samples T-tests. I compared year in medical program and area of study or degrees held before medical school with each GCOS subscale mean using a one-way Analysis of Variance (ANOVA). Gender was included in the ANOVA to account for interaction effects. I also measured effect sizes, which were a measure of the practical significance of quantitative research results (Hojat & Xu, 2004, p. 241). Effect sizes were calculated by comparing the differences of the means between two groups or variables. Effect sizes of .2, .5, and .8 were considered small (negligible importance), medium (moderate importance), and large (crucial importance), respectively (p. 243).

For the LCQ, the Cronbach's alpha reliability analysis value for my study was .91. I compared gender and educational site with LCQ scores using independent samples T-tests. I compared year in medical program and area of study or degrees held before medical school with the LCQ mean scores using a one-way Analysis of Variance (ANOVA). Gender was included in the ANOVA to account for interaction effects. I measured effect sizes for all LCQ analyses with a comparison of means.

For the SRQ-L, average scores from the controlled subscale were subtracted from the average scores from the autonomy subscale to generate a Relative Autonomy Index (RAI).

Higher RAI scores suggested more autonomous reasons for individual learner engagement. The Cronbach's alpha reliability analysis values for the two SRQ-L subscales in my study were: autonomy (.73) and controlled (.75). I compared gender and educational site with each mean subscale score and the RAI scores using independent samples T-tests. I compared year in medical program and area of study or degrees held before medical school with each mean subscale score and the RAI score using a one-way Analysis of Variance (ANOVA). Gender was included in the ANOVA to account for interaction effects. I measured effect sizes for all SRQ-L analyses with a comparison of means.

These surveys ran separately from the World Café process of Phase II of the study. That is, the World Café sessions were not dependent on the data collected from these surveys. The data from these surveys, in aggregate form, helped to develop an understanding of the baseline causality orientations, perceived autonomy supportiveness, and degree of self-regulation of the participants in this study.

At the World Café events, the participants recorded all of their information on large sheets of paper at their tables. The participants were debriefed at the beginning of the café session about recording their ideas, the amount of detail to record, documenting a general sequence of idea generation, and creating a relative hierarchy of ideas based on importance during the discussion. Because this information on the sheets was the primary source of information for the analysis after the session, I noted the importance of the participants understanding the significance of effective documentation for understanding the phenomenon, and for ensuring my ability to transcribe and translate their thoughts accurately.

Each subthemed discussion session ended with a large group discussion where each group presented some of the highlights of their conversations. I recorded this information, which served as a cross-reference to the information recorded on the sheets at each table.

All information collected at the session was transcribed and imported into NVivo 10 software for analysis using deductive content analysis (Hsieh & Shannon, 2005; Elo & Kyngas, 2008). This approach to qualitative data analysis allowed me to make “replicable and valid inferences from data to their context, with the purpose of providing knowledge, new insights, a representation of facts and a practical guide to action” (Elo & Kyngas, p. 108). Deductive analysis is a process where a researcher sets out to determine if data collected is consistent with an existing theory or hypothesis (Thomas, 2006). I used this analytical approach because the research questions and the topics for discussion during the World Café session were based on the theoretical constructs of self-determination theory. My purpose in this research was to expand on the understanding of self-determination theory as it related to medical students’ motivation to learn.

An inductive content analysis is the contrasting analytical process to deductive analysis. Inductive content analysis is an emergent process involving detailed reading of information collected during the research process. During the analysis, concepts, themes, or theoretical constructs are developed through interpretation of the content by the researcher and, where appropriate, by the participants (Thomas, 2006). Although in my research I developed concepts and themes, the tenets of self-determination theory guided the development of these themes.

One of the key principles for either analytical approach involves the researcher immersing him or herself in the data (Elo & Kyngas, 2008). Once the data are organized or transcribed, the researcher should read through the data several times to develop an

understanding of the general flow of ideas, and the organization of thoughts before any coding begins. The next step involves highlighting, making notes, and categorizing in the text any instances of the phenomenon that relates to the theory. Consistent with this approach, after the data were transcribed, I printed the data and read through it once. After reading the data, I entered it into NVivo, read through it again, and identified some of the key words and phrases, which I recorded in memos. During this process, I also used memos to document my personal reflections on the data points that I identified as informative and insightful.

The three basic needs of self-determination theory guided the structural framework for the World Café. These basic needs served as the three initial categories for analysis. Once all of the data were transcribed and imported into NVivo software, I read through the data thoroughly and began the coding and categorization process. I initially coded data from the Saskatoon and Regina sites separately, which in turn allowed me to identify similar themes and themes that were unique for each site. Given the context for learning was different in each site, related to the nature of distributed education, I attempted to explore if such differences had an impact on learners' perspectives of their self-determination.

The process for coding the data was guided by processes described by Saldana (2013). For the first stage of the coding process, I read all of the raw data to develop a broad understanding of the information and general flow of ideas. In the World Café method, I asked participants to record their ideas and points of discussion as they occurred. The participants typically chose to document their discussion points and ideas with bullet points; therefore, I collected succinct and specific comments related to the four major topics of the World Café event – autonomy, competence, relatedness, and recommendations.

I applied line-by-line initial coding of the raw data, which involved breaking down, closely examining, and comparing the data for similarities or differences (Saldana, 2013, p. 100). Because the data were already in discrete bulleted units, my goal was to begin to group similar discussion points into basic codes. This approach was similar to what Saldana (2013) referred to as holistic coding, which attempted to amalgamate similar data points into common coding units rather than split them into discrete codes. Therefore, any data points that discussed similar ideas, concepts, or concerns within a major topic were placed into a code. At this point, I amalgamated all related categories and themes from across both program sites.

Elo and Kyngas (2008) noted that in some cases information might not clearly fit within the original theoretical categories or subcategories, which in turn may require the development of a new category. A situation like this may require an inductive content analysis to further elucidate the properties of that category. The role of this inductive process would be to take the specific concepts that appear to be related and bring them together to form a new category (Hsieh & Shannon, 2008). Through this deductive analytical process (inductive when appropriate), the information collected during the research is organized and specifically categorized in order to expand the knowledge and original understanding of the theory.

Establishing Trustworthiness

The basic question that could be asked when discussing the trustworthiness of qualitative research is, “how can an inquirer persuade his or her audiences...that the findings of an inquiry are worth paying attention to, worth taking account of?” (Lincoln & Guba, 1985, p. 290) I used the framework presented by Lincoln and Guba (1985) and further elaborated on by Shenton (2004), which described four criteria that helped to address trustworthiness of my study. These criteria include: (a) ensuring credibility of findings, (b) demonstrating transferability of findings,

(c) ensuring dependability of findings, and (d) ensuring confirmability throughout the study (Lincoln & Guba, p. 290).

Credibility. In establishing the truthfulness or credibility of research findings, researchers must ensure that the findings accurately represent the actual described experiences provided by the participants. When researchers follow a constructivist paradigm, where multiple constructions of reality exist, they must ensure that their reconstruction of the participants' original experiences are adequate or credible (Lincoln & Guba, 1985). I sought credibility of the findings in a variety of ways, following the strategies outlined by Shenton (2004):

1. Adoption of well-established researched methods. The World Café process and principles are consistent with the core values and principles of participatory action research (Aldred 1995; Cornwall & Jewkes, 1995), and it shares many principles with appreciative inquiry (Brown & Isaacs, 2005; Aldred, 2011). World Cafes have traditionally been used in business and other social advocacy contexts and have only recently been used as a research method (Fouche & Light, 2010; Stockigt, Teut & Witt, 2013). Based on the detailed and organized framework of the World Cafe process, I believed that this approach held promise as a rigorous method.

Appreciative inquiry (AI) is also a relatively new research method. Cooperrider and Whitney (2001, p.3) defined it as a "...search for the best in people, their organizations, and the relevant world around them.... It involves systematic discovery of what gives 'life' to a living system when it is most alive, most effective, and most capable...." AI questions the strengths of a system and attempts to improve on positive potential. AI follows a process of diagnosis, discovery, dreaming, and designing, and intentionally avoids criticism and focusing on limitations or negative aspects within the system. By focusing on and appreciating the positive

aspects within a system, the goal becomes to build on these strengths and positive aspects to drive change and improve the system (p.3). Similarly, the World Café process focuses on questions that matter to individuals, and the questions and conversations are often framed in a positive manner to focus on positive growth (Brown & Isaacs, 2005).

2. Development of familiarity of organization. I am a graduate of the University of Saskatchewan College of Medicine and have been teaching in the college since I graduated. I have been immersed in the educational mission of the college and work closely with the students to support their learning and advocate for their academic and non-academic needs. At the time of this research project, I had a positive working relationship with the students; however, because of my role as a program phase Chair, I had to continue to maintain a professional relationship with the students. This professional relationship allowed me to maintain an appropriate degree of scientific scrutiny in this research.

3. Random sampling. Shenton (2004) suggested choosing a random sample of participants because random sampling offers the advantage of reducing researcher bias. However, Patton (1999; 2002) argued that the goal in qualitative research was to gather rich information to develop a deep understanding of the phenomenon being studied, which often required purposeful selection of individuals who represent specific perspectives that will appropriately address the research purpose. The purpose of randomization is to produce generalizable findings. With random sampling, I would also risk recruiting participants who are typically not vocal, not cooperative, or not interested in the purpose of the research, which would negatively affect the richness of the information (Shenton, p.65).

I purposefully attempted to engage learners from all four years of the medical program, because I believed that the breadth of experience across the medical program would be valuable

and informative. At both World Cafe events, I attained student representation from across all four years of the medical program. A greater proportion of pre-clerkship students participated in the World Cafe (Saskatoon site, 75%; Regina site, 61%); however, I expected this disproportion because the clerkship students' had limited availability due to their rotation on-call schedules and many were travelling for off-site rotations. At the Saskatoon World Cafe, there were more females ($n = 29$) than males ($n = 17$), and at the Regina World Cafe, there more males ($n = 11$) than females ($n = 7$). The participants in my study were volunteers, which was a limitation because volunteer sampling introduced the potential for self-selection bias. To mitigate the effects of self-selection, my invitation to participate in the study encouraged students with positive and or negative experiences to engage in the discussion.

4. Triangulation. Triangulation involved collecting multiple types of information, and gathering information from a variety of stakeholders. The purpose of triangulation was to serve as a verification of the information that was gathered (Shenton, 2004). In Phase I of the study, I gathered quantitative information about learner perspectives of learning climate and orientations to self-determined behaviour, which helped to provide context for the information collected in Phase II of the study. Other examples of triangulation included: (a) mixing groups during the World Café, which generated opportunities for participants to share their perspectives with a greater number of participants; and (b) coordinating the large-group de-briefing session after each small-group session, which served as an opportunity for participants to share their ideas with all participants, to clarify ideas, and to verify perspectives.

5. Ensure honesty in participants. Of course ensuring honesty in participants is a challenging task, because honesty is an individual construct and difficult for others to control; however, I attempted to create an environment that enabled open and authentic conversations. I

adhered to the standards articulated by the Behavioural Research Ethics Board at my university, which ensured that participants knew that they were under no coercion to engage and that they could withdraw at any time. I trusted that my previous rapport with the students (i.e., trusting relationships, non-judgmental approach to education) served to facilitate discussion that is more open. Participants were encouraged to speak freely and frankly throughout the process, and I was not directly involved in the participant discussions as they occurred, which I anticipated would free participants from inhibitions and facilitate conversations. The World Café conversational process supported a more relaxed and “informal” discussion environment, which supported freer expression of ideas.

6. Debriefing and peer scrutiny. Throughout this research, I worked closely with my doctoral supervisor and committee and other colleagues to ensure that I remained reflective and unbiased in my understanding of the experiences of the participants, that my interpretations were reasonable and consistent with the information provided by the participants, and that I reported the information accurately as intended by the participants.

Transferability. Establishing transferability in a naturalist paradigm is a context dependent issue, particularly when one approaches it from a constructivist perspective. Generalizable findings are important in a rationalistic quantitative framework. Quantitative researchers expect their findings to be relevant for any context. However, in a naturalistic qualitative framework where multiple realities and constructions of reality exist, to claim, with any certainty, that the findings in one context apply to another context conflicts with the framework (Lincoln & Guba, 1985). These conceptual underpinnings formed the framework for my research.

Instead, researchers look for transferability or the notion that given adequate information, individuals in different contexts decide if the findings resonate with and are applicable to their context. The most effective and appropriate approach to establishing transferability is by providing readers with deep and rich descriptions of the information so that they gain a reasonable understanding of the context of the study, who the participants were, and how the information was collected, analyzed, and interpreted (Shenton, 2004). In this study, I provided detailed descriptions of my methods and results, which I trusted would allow readers to determine the extent to which my findings and conclusions transferred to their context.

Dependability and confirmability. I placed these two concepts together because they are closely related and relied on similar elements in order to be achieved. For dependability, similar issues existed as did with transferability. In a positivistic paradigm, reliability is the goal and it refers to the notion that if a study were repeated in the same context with the same parameters, one would obtain the same or very similar results (Shenton, 2004). However, in a naturalistic, qualitative framework, reliability is problematic because every context and experience of a phenomenon is unique. The goal in qualitative research in attempting to ensure dependability is to describe and report methodology and methods in detail, so that if the study were repeated, the necessary information would be available to do so. Shenton also explained that “even when different investigations offer results that are not entirely consistent with one another, this does not, of course, necessarily imply that one or more is untrustworthy. It may be that they simply reflect multiple realities...” (p. 71).

Keeping a thorough record of all documentation created throughout the study, known as an audit trail (Lincoln & Guba, 1985), was critical to ensuring dependability. Examples of documents that need to be kept and organized include raw data, field notes, memos, reflective

journals, mappings of categories, themes and emerging theories, audit trail notes, and the final report (Lincoln & Guba, p. 319). Maintaining a rigorous organization of all documents ensures that both the processes and product of the research fall within acceptable limits, or are “verifiable”(p. 318). I kept all original table sheets with participant comments; all transcribed documents; all code, category, and theme mappings in NVivo; and all memos and personal reflections.

The purpose of confirmability is to reduce researcher bias and adopt an approach of full disclosure of predispositions in all stages of the research. Another key element in the research process that helps to achieve confirmability is through triangulation. By having multiple sources of information that are reasonably consistent with one another, the researcher helps to confirm the information and reduce researcher bias (Shenton, 2004).

In my research study, I attempted to establish triangulation of information using a variety of sources. First, I ensured that students from across all four years of the program were represented in all phases of the study. In this way, I attempted to maintain relative consistency of perspective and experiences represented throughout the study. Second, in the World Café sessions, I arranged for multiple small groups to discuss the same key questions. Although the purpose of this arrangement was to generate a variety of thoughts and ideas related to the discussion questions, the process also revealed a number of thoughts and ideas that were consistent across groups. Further, the large group de-briefing sessions that followed the small group conversations related to each basic need revealed the common and significant themes that were discussed, which served as a confirmation of the importance and relevance of the issues.

Ethics

I adhered to the standards of the University of Saskatchewan Behavioural Research Ethics Board (see Appendix D – Ethics Application). This study was guided by the principles of action research and therefore it involved a direct interaction between me and the students I taught or had taught in previous years. At the time of this research project, as indicated, I also served as the Phase A chair, which was a leadership role in the College of Medicine undergraduate education administration team. Therefore, in two ways, I had a position of authority related to the students. Using the ethical standards for engaging in behavioural research, I attempted to mitigate my position of authority in a number of ways: (a) the participants understood that their involvement in the study was voluntary and that the online surveys were anonymous, therefore preventing me from knowing who completed the surveys; (b) at the World Café, when the participants signed the consent form to participate, I had a third party member, who was not in a relationship with the participants and not in an authority position, witness the participants' signatures; (c) although I facilitated the World Café process, I attempted to ensure the efficiency of the process, and not to actively listen to the discussions in each group, which helped to reduce any inhibition among participants; (d) the participants were informed that the information that they provided would be confidential and would in no way impact their standing in the College of Medicine.

The appended ethics application describes how I conducted my research in an ethical manner. The above listed ethical points were specific to my relationship with the students. The content and concepts discussed by the participants in this study were of minimal risk to the participants.

Summary of Methodological Framework and Study Design

The purpose of this research was to develop a better understanding of medical students' self-determination, specifically, medical students' perspectives of their self-determination in their medical education. Self-determined motivation is dependent on the fulfillment of the three basic needs of autonomy, competence, and relatedness. My research questions and the design of the study sought to access learner perspectives regarding these three basic needs in order to expand on these motivational elements, particularly as they related to the medical student context. Medical school is a unique context because medical learners are often considered highly motivated; however, the understanding of the medical school context from a self-determination theory perspective, and from the learners' perspective has not been explored.

My methodological framework was guided by principles of participatory and action research. The World Café conversational process was consistent with a participatory framework in that the participants led their own group discussions and they were able to make recommendations for change. The research focused on understanding student perspectives of motivation because self-determined motivation is an internally regulated process. The findings of my research project may help to inform teachers about how best to engage learners and to understand the importance of using teaching approaches that support learner self-determination.

I ensured trustworthiness of the study by using reliable methods, by applying my prior knowledge of the medical school context, by conducting appropriate and representative sampling, and by using reflective documentation and triangulation of information. With respect to triangulation, I ensured continuity of participation of medical students across all four years of the program, by recruiting medical students from all four years for both phases of my study. Confirmability of findings occurred during the World Café process where among the diversity of

ideas generated in participant groups, many ideas proved to be consistent across groups, which was also confirmed in the large group de-briefing sessions.

Teachers are constantly trying to find ways to motivate and engage learners in order to enhance learning. They do so by employing effective teaching strategies and by effectively managing course content. The challenge, however, based on researchers' understanding of learner autonomous motivation, is that motivation is dependent on learner. Teachers can employ a variety of instructional strategies, but when these strategies are not consistent with student goals and values, and are not endorsed by students themselves, then teachers are not able to fully achieve their goal to motivate, engage, and help students to learn. My research sought to explore student experiences and perspectives on the basic psychological needs of autonomy, competence, and relatedness, which in turn may help to inform teaching practices that more effectively support medical students' self-determination.

CHAPTER 4: RESULTS

This study was conducted to explore medical students perspectives of their self-determination in their medical education. I organize the sections in this chapter consistent with the two phases outlined in the research design in Chapter 3. In Phase I of this study, participants completed a survey requesting demographic information, followed by three validated surveys – the General Causality Orientations Scale (GCOS; Deci & Ryan, 1985b), the Learning Climate Questionnaire (LCQ; Williams & Deci, 1996), and the Learning Self-Regulation Questionnaire (SRQ-L; Williams & Deci). I present the results of the data analysis in this chapter.

In Phase II of this study, participants engaged in a World Café conversational process where they discussed, in rotating small groups, experiences where autonomy, competency, and relatedness with professors was supported or hindered. Participants also discussed recommendations for action based on the various experiences discussed related to each element. I held two World Café sessions, one session for the Saskatoon site medical students and one session for the Regina site medical students. In this chapter, I present the findings of the thematic analysis from the World Café conversations.

Phase I: Online Survey Results

In Figure 4.1, I outline the number of students who participated in Phase I of the study and include the number of students who participated in each year of the program. Of the 370 medical students eligible to participate, 210 (57%) followed the link to the survey and 178 (48%) students answered the survey to completion.

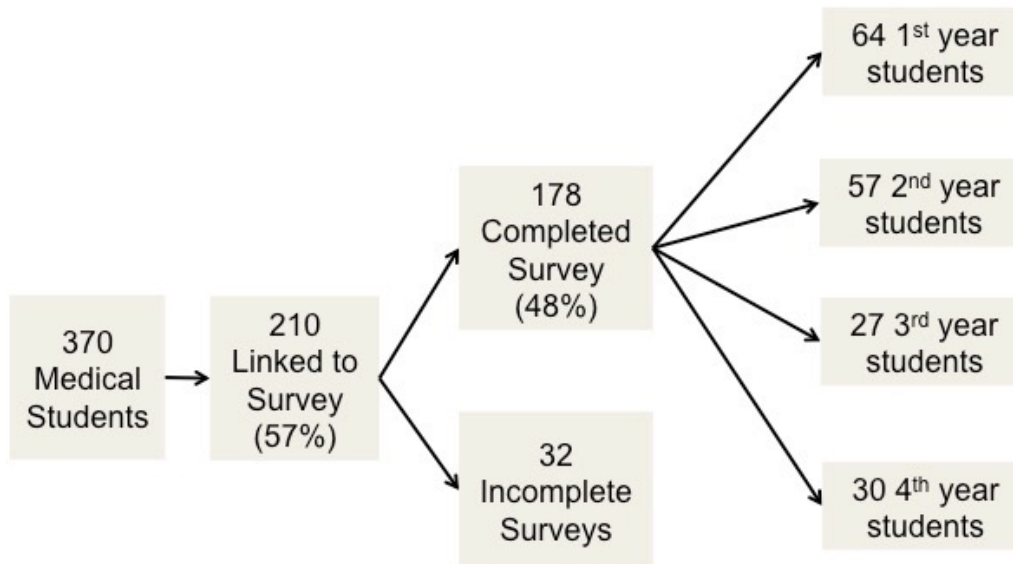


Figure 4.1 Breakdown of participant numbers for Phase I.

In the first section of the survey, the participants were asked to provide demographic information. The purpose for gathering this information was to compare various demographic parameters with each of the three self-determination theory surveys included in the online survey.

All three of the self-determination theory sub-surveys (GCOS, LCQ, and SRQ-L) were accessed via a single web link that directed participants to the Fluid Survey site. Each of these sub-surveys was independently scored and the results of one survey were not dependent on the other surveys. Therefore, if a participant completed the GCOS, but did not complete the other two surveys, I used that participant's GCOS data in the analysis for all parameters related to the GCOS. This explains why the participant numbers for the three surveys were different from one another and from the 178 participants who completed the entire survey.

Of the 178 participants who completed the entire survey, 57% were female. In Table 4.1, I present the current year in the medical school program of all survey respondents.

Table 4.1

Number of Students in Each Year of the Medical Program

	Year in Medical Program				Total
	1 st Year	2 nd Year	3 rd Year	4 th Year	
Number of Students	64 (36%)	57 (32%)	27 (15%)	30 (17%)	178

In Table 4.2, I present the number of years of university the respondents had completed before entering medical school.

Table 4.2

Frequency Data for Number of Years of University before Medicine

	Years of University before Medical School				Total
	2	3	4	>5	
Number of Students	31 (18%)	48 (28%)	50 (29%)	44 (25%)	173

The College of Medicine at the University of Saskatchewan has a distributed medical education program; therefore, I asked participants to indicate the site at which they were enrolled. The options for site included Saskatoon and Regina. A medical education site exists in Prince Albert; however, at the time of this study few students ($n = 4$) attended this site, so the Prince Albert site was not included in the analysis. Of the 178 students who completed the

survey, 120 (67%) were enrolled in the Saskatoon site. This percentage reflected the percentage distribution of students between the Regina and Saskatoon sites.

General Causality Orientations Score (GCOS) Analysis

The GCOS was developed to determine an individual's tendency toward three identified causality orientations: autonomy, controlled and impersonal. Higher scores in a specific subscale suggested a tendency toward that orientation (Williams & Deci, 1996). One hundred and eighty-five medical students (57% female) completed the GCOS survey. Sixty-six students were from first year, 57 were second year students, and there were 31 students in each of the third and fourth years of the medical program.

In Table 4.3, I present the gender comparisons for the GCOS scores. I used independent samples T-tests for each subscale comparing gender. Effect sizes were also determined, where effect sizes of .2, .5, and .8 are considered small, medium, and large, respectively (Hojat & Xu, 2004). The mean autonomy scores for males and females were higher than mean controlled and impersonal scores. Mean controlled scores were higher than mean impersonal scores, which indicated that, overall, students were more autonomy-oriented. However, females scored higher on mean autonomy than males ($p = .005$). In addition, male mean controlled scores were higher than females ($p = .001$), which suggested that the male participants had a greater tendency towards a controlled orientation and female participants had greater tendency toward an autonomy orientation. There were no gender differences for mean impersonal scores.

I performed a one-way analysis of variance (ANOVA) to compare the GCOS subscale mean scores with medical student year in program. Because the gender scores were significant for autonomy and controlled orientations, gender was also included in the ANOVA to account for interaction effects. I found no statistically significant differences when comparing year in the

medical program with each of the three GCOS subscales (autonomy, $p = .10$; controlled, $p = .74$; impersonal, $p = .72$), and gender did not have an interaction effect. Therefore, I could not accept the hypothesis that the autonomy orientation of medical students might be higher in the upper years of the program.

Table 4.3

Gender comparison for GCOS subscales

GCOS subscale	Male ($n = 79$)		Female ($n = 107$)		$t(183)$	p	Cohen's d
	M	SD	M	SD			
Autonomy	5.63	.57	5.89	.62	2.86	.005	.44
Controlled	3.99	.65	3.67	.580	-3.51	.001	.52
Impersonal	3.28	.77	3.26	.81	.16	.87	.03

I performed a one-way ANOVA to compare the GCOS subscale mean scores with the number of years of university current medical students had taken before entering medical school. The categories for years before medical school included two years, three years, four years, and five or more years. Gender was included in the analysis to account for interaction effects. I found no statistically significant differences when comparing the numbers of years of university before medical school with the GCOS subscales. There was no gender interaction effect. Therefore, the hypothesis that the number of years of medical school might have a positive impact on autonomy orientations was not accepted.

Further, I performed an independent samples t-test to compare the GCOS subscale mean scores with the distributed medical sites of Regina and Saskatoon. All first year medical students were excluded from the analysis because the first year of medical school is only at the Saskatoon

site. I found no statistically significant differences when comparing the causality orientations between the two sites.

Summary of GCOS findings. I found no statistically significant differences in the GCOS subscale scores for the demographic parameters of year in program, number of years of university before medical school, and medical school site placement. I found a statistically significant difference between males and females for autonomy and controlled causality orientations, in which females were more autonomously oriented and males were exhibited a more controlled orientation. These gender differences were consistent with previous reports in the literature (Deci & Ryan, 1985b). The effect size for gender comparison of the autonomy subscale was .44, which indicated that the practical difference in mean score between females and males was moderate. The effect size for gender comparison of the controlled subscale was .52, which indicated that the practical difference in mean score between males and females was moderate.

Learning Climate Questionnaire (LCQ) Analysis

The purpose of the LCQ was to measure the extent to which students perceived their instructors to be autonomy supportive. Higher mean scores represented a higher level of perceived autonomy supportiveness of their teachers. One hundred and seventy nine medical students (57% female) completed the LCQ. In Table 4.4, I present the demographic information for students who completed the LCQ.

Data analysis for the LCQ included comparisons of gender, year in medical school, number of years of university before medical school, and site placement. The mean LCQ score for all participants was 4.46 on a 7-point Likert scale. I performed independent samples T-tests to compare mean LCQ scores with student gender and site placement. I performed ANOVAs to

Table 4.4

Demographic information for LCQ

Gender	Year in Medical Program				Total
	1	2	3	4	
Male	31	21	10	15	77
Female	33	36	18	15	102
Total	64	57	28	30	179

compare mean LCQ scores with year in medical program and years of university before medical school. Only the comparison of LCQ score with site placement reached statistical significance (Table 4.5). The site placement comparison excluded all first year students because they were located exclusively at the Saskatoon site.

Table 4.5

Comparison of Site Placement LCQ score

Site						
Saskatoon		Regina		$t(177)$	p	Cohen's d
M	SD	M	SD			
4.60	.91	4.22	.82	-2.69	.008	.44

Summary of LCQ analysis. I found no statistically significant differences when comparing mean LCQ scores with the demographic parameters of gender, year in medical program, and years of university before medical school. I found a statistically significant difference when comparing mean LCQ score with medical school site placement, which

suggested that the students in Regina perceived that the autonomy supportiveness of their instructors was lower than their colleagues at the Saskatoon site. The effect size for the site comparison was .50, which is considered to be of moderate practical significance.

Learning Self-Regulation Questionnaire (SRQ-L) Analysis

The SRQ-L measures whether a learner's self-regulation (i.e., why an individual engages in learning) is autonomous or controlled. Higher scores in the autonomy subscale elements suggest more autonomous reasons for engaging in learning. Higher scores in the controlled subscale suggest more controlled reasons for engaging in learning. The average from the controlled subscale for each individual can be subtracted from the average of the autonomy subscale to generate a Relative Autonomy Index (RAI). A higher RAI suggests a more autonomous reason for an individual to engage in learning. One hundred and seventy eight students completed the SRQ-L, and 102 (57%) were female. Sixty-four first year students, 57 second year students, 27 third year students, and 30 fourth year students completed the survey.

In Table 4.6, I present the results of the independent samples T-tests that compared SRQ-L subscale scores and RAI scores with gender. The mean autonomy scores for males and females were higher than mean controlled scores. However, females reported a statistically significantly higher mean autonomy score than males. Males reported a statistically significantly higher mean controlled score than females. I compared mean RAI scores and found that female mean scores were higher than male mean scores, which was consistent with the autonomy subscale results.

I performed a one-way ANOVA to compare the SRQ-L subscale and RAI mean scores with medical student year in program. Because a statistically significant gender difference

Table 4.6

Gender comparison for SRQ-L subscales and RAI

SRQ-L subscales	Male (<i>n</i> = 76)		Female (<i>n</i> = 102)		<i>t</i> (176)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Autonomy	5.75	.60	6.12	.66	3.78	.000	.58
Controlled	4.02	.95	3.71	.87	-2.29	.023	.34
RAI	1.72	1.04	2.41	1.00	4.40	.000	.67

existed for all subscales, I included gender in the ANOVA to account for interaction effects.

Initial univariate analysis revealed a statistically significant difference for the autonomy subscale based on the year in the medical program, $F(3) = 4.24$, $p = .006$. I found no statistically significant differences for year in the medical program and the controlled subscale. Subsequent Tukey HSD post hoc analysis for autonomy between years in the program revealed a statistically significant difference for the mean autonomy subscales scores between only the first year and third year students ($p = .005$), with first year students reporting higher autonomy scores. I did not measure an interaction effect for gender. The Cohen's *d* effect size for the comparison of first and third year student mean autonomy scores was .65, which indicated a medium effect.

I performed a one-way ANOVA to compare the autonomy and controlled SRQ-L subscale mean scores with the years of university medical students had taken before entering medical school. The categories for years before medical school included two years, three years, four years, and five or more years. I included gender in the analysis to account for interaction effects; however, the subgroup sample sizes for year in the medical program and number of years

of university before medical school were too small to determine interaction effects. I found no statistically significant differences when comparing the SRQ-L subscales with years of university before medical school.

I performed an independent samples t-test to compare SRQ-L autonomy and controlled subscale scores and the RAI mean scores with site placement. I excluded all first year medical students from the analysis because the first year of medical school was only at the Saskatoon site. I found no statistically significant differences.

Summary of SRQ-L analysis. The mean autonomy scores for males and females were higher than mean controlled scores, which indicated that students, overall, engaged in learning for more autonomous reasons. Females reported more autonomous reasons for engaging in class than did males. Males reported a higher mean controlled score than females, which suggested that the male participants had a greater tendency to engage in their learning for controlled reasons compared to female participants. I found no statistically significant differences when comparing SRQ-L scores with year in medical school, years of university before medical school, and site placement. Therefore, I could not accept the hypothesis that the number of years in medical school, the number of years of university before medical school, or the site placement of students had a positive impact on either autonomous or controlled reasons for engaging in learning. These parameters did not appear have any effect on learners' reasons for engaging in learning.

Phase II – World Café Qualitative Data Analysis

In phase II of this study, medical students from across all four years and from both medical program sites at the University of Saskatchewan were invited to participate in two World Café conversational events. I invited all medical students ($n = 4$) from the Prince Albert

site to participate at the Saskatoon World Café event. No Prince Albert students were available to participate in the World Café.

The purpose of the two World Café events was to gather medical students to discuss their perspectives of their self-determination in context of their medical education. The conversations were guided by the basic psychological needs related to self-determination: autonomy, competence, and relatedness. I asked students to reflect on their experiences and to discuss examples of when their autonomy and competence were either supported or hindered and how this impacted them as learners. I also asked the students to discuss their experiences of positive or negative relatedness with teachers and how these experiences impacted them as learners. For the final point of discussion, I provided the students with an opportunity to make recommendations about how to support learner self-determination based on the ideas generated during their conversations.

Results of the Word Café Events

The World Café event for Saskatoon was held on a Wednesday evening in April. Forty-six students attended the event. The World Café event for Regina was held the following Thursday evening with 18 participants in attendance. In Table 4.7, I present the number of participants from across the four years of the program and from each site who attended the World Café events.

The students arrived at 5:00pm and signed the consent forms for participation in the World Café. After the students signed the consent forms, I started the event with a welcome and introduction to the background and purpose of the study. After the introduction, I asked the participants, in their small groups to reflect on, discuss, and document their experiences of autonomy, competence, and relatedness as described in the research design in Chapter 3.

Table 4.7

Distribution of Participants for World Café Events

Program Year	Saskatoon		Regina	
	Male	Female	Male	Female
1	6	13	-	-
2	8	9	6	5
3	1	4	4	0
4	2	3	1	2
Total	17	29	11	7

The information from the sheets were transcribed to an electronic document and imported to NVivo software for qualitative deductive content analysis. Raw data from the Saskatoon and Regina sites were coded separately, which in turn allowed me to identify similar themes, and themes that were unique for each site. Given the context for learning was different in each site, related to nature of distributed education, I attempted to explore, in the analysis, if such site differences generated contrasting learner perspectives related to their self-determination.

My research was guided by the three basic needs of self-determination theory: autonomy, competence, and relatedness; therefore, the data coding and theme generation was organized based on these three elements. I organized the discussion of the themes and findings into the sections autonomy, competence, and relatedness. For each of the basic needs the codes, concepts, and themes that were similar across sites will be discussed together. Any codes or themes that were unique to the Regina site will be presented in separate section. Similarly,

because the experiences of the clerkship students were distinct from pre-clerkship, I present the results of their perspectives in a separate section.

Data Coding and Categorization

The process for coding the data was guided by processes described by Saldana (2013). For the first stage of the coding process, I read through all of the data to determine the essence of the information and flow of ideas. In the World Café method, I asked participants to record their thoughts and discussions as they occurred. The participants typically chose to document their discussions and thoughts with bullet points; therefore, I collected succinct and specific comments related to the four major topics of the World Café event – autonomy, competence, relatedness, and recommendations.

I applied line-by-line initial coding of the raw data, which involved breaking down, closely examining, and comparing the data for similarities or differences (Saldana, 2013, p. 100). Because the data were already in discrete bulleted units, my goal was to begin to group similar discussion points into basic codes. This approach was similar to what Saldana (2013) referred to as holistic coding, which attempted to lump similar data points into common coding units rather than split them into discrete codes. Therefore, I placed any data points that discussed similar ideas, concepts, or concerns within a major topic into a code.

After all the data were coded in the first cycle of coding, I performed a second cycle of pattern coding where I analyzed each of the codes for common themes across codes that should be grouped together into categories that best explained or conceptualized the codes (Saldana, 2013). After creating categories, I performed a final analysis to establish the emergent overall themes for the study.

Analysis of Basic Need 1: Autonomy

The first topic of conversation at the World Café event explored the participants' perspectives of autonomy during their medical education. I asked the participants to discuss experiences where autonomy was supported and hindered and how these experiences impacted them as learners. Although there were commonalities across sites, some unique features arose, which I highlight in a separate section. Where the perspectives for the clerks were unique, I present these in a different section. I present major themes with headings, and I present the codes that contributed to development of the categories as subheadings.

As I collated and organized the data, it became clear to me that an autonomy-supportive learning environment was important to the participants. When autonomy was not supported, it had a significant impact on student motivation and their well-being. Participants at one café table wrote:

- When our autonomy is prioritized, it makes our lives more meaningful, reduces stress, and encourages independent learning.
- When autonomy decreases, it's frustrating as a student, [blood pressure] increases, builds resentment in students, and stunts creativity.

Pre-Clerkship Theme 1: Choice

Students at all tables discussed the importance of choice as a key element in their experiences of autonomy related to both autonomy supportiveness and hindrance, that is being provided with choice supported their feelings of autonomy, and a lack of choice hindered their feelings of autonomy. Choice, or the ability to act with volition or to be responsible for one's behaviours (in this context, learning) is critical for supporting individual self-determination (Deci & Ryan, 2000). The students in this study conceptualized and prioritized choice in multiple

ways. Students perceived that being able to choose how they could use their time, how they could approach their learning, when they could engage in learning, and in which activities they could engage provided a source of control, which supported their autonomy. The students also discussed several enabling elements that supported choice beyond how and when to learn, including: pass/fail academic standards, teachers who provided choice to students, teachers who provided clarity to students about what they should learn (e.g., objectives), clear program expectations (e.g., goals and assessments), and availability of appropriate learning resources.

Code 1: Choice about how to use my time. Medical school curricula are often intense in terms of both cognitive load and curricular time required. Courses and class schedules in pre-clerkship, and core rotations in clerkship are predetermined, which provides little choice to students. The content to be taught is also predetermined by teachers, curriculum committees, and higher governing authorities. The curriculum offers the students some opportunities for choice related to how students use their time for studying, engage in clinical shadowing, or learn about clinical specialties outside of the common core rotations. The pre-clerkship schedule includes built-in independent learning time, and clerks have designated elective time where they can choose specialties of interest in which to engage.

Pre-clerkship student comments related to choice about how they used their time focused on the importance of and their appreciation for having dedicated curricular time for independent learning, because this independent learning time allowed them to engage in activities of personal but medically focused interest. For example, participants mentioned that they often used their independent learning time to shadow physicians. Shadowing was highly valued by students because it allowed them to learn and apply their medical knowledge and skills, to see physicians interact with patients in real-life contexts, and to experience different specialties in medicine for

career decision-making. Clerks mentioned the importance of electives during their clerkship, which provided them with the “freedom to take what you want” or “choose what you wanted to learn.”

Most participants believed that independent learning time was useful and supported autonomy; however some students noted that independent study time was not always beneficial. Their concern related to the open-ended nature of independent learning time, where without provision of guidance or structure, they believed that they could not use the time for the purposes in which it was intended (e.g., independent review, learning, studying, or pursuit of interests). These students believed that with a little guidance they could make more effective use of independent study time.

Some café groups noted that the heavy demands of the medical school curriculum limited their ability to maintain a healthy balanced lifestyle in spite of available independent learning time. Some students thought that too many assignments existed with unreasonable deadlines, such that students felt that they had little control of their time to pursue areas of personal interest. One student wrote, “[Our courses offered] no flexibility in how we could balance our lifestyle. I wanted to continue the activities and volunteering that balanced my life and had shaped me....”

A common issue that café groups discussed under the code *how I use my time* was mandatory attendance. Students believed that mandatory attendance at all lectures limited their ability to choose how to use their time for learning and the most suitable approach to learning that specific content. Students referred specifically to attendance in lectures. They did not refer to mandatory attendance at small group learning sessions. Participants thought that making lectures non-mandatory supported their ability to choose how to use their time to learn in ways that best suited their needs and pace for learning. One café group noted that, “Students want to

please lecturers, [but as a consequence] do not practice good self-care.” They believed that this conflict impacted autonomy and self-determination.

One café group discussed a tension between faculty and students related to mandatory and non-mandatory lectures, which they described as a “vicious cycle.” The students described times when they either did not wish to attend or failed to attend lectures, and faculty expressed to them frustration when lecturing to low numbers of students. Students believed that feeling forced to attend lectures affected their autonomy and impacted their motivation to learn. The students perceived that poor attendance affected faculty motivation to teach because they did not want to teach to an empty classroom.

Several café groups noted other pedagogical and curricular elements that supported choice for how students use their time for learning. These elements included: provision of objectives, establishment of pass/fail assessment systems, use of flipped classroom teaching approaches, and provision of video recorded lectures. The participants believed that these elements supported autonomy because they allowed students to experience control and choice for how they used their time, but also for how they learned and the pace at which they learned. One participant noted, “[class] objectives provide autonomy because you can go at your own pace to learn the required materials.” Another participant expressed similar thoughts about the use of flipped lectures, “you can learn at your own pace in a way suitable to your own needs.” One student noted, “recorded lectures...allow students (eg. *sic* Night owls) to study at their peak production hours. Can also watch at own speed, can start and stop lectures as needed.”

A significant issue that many café groups discussed related to their autonomy for how they used their time was the physical availability of time. Some comments at café tables revealed student dissatisfaction about inadequate time “to learn everything we want to do in the

time that we want to.” This quotation alluded to not only an issue related to insufficient time to learn the required content, but also to insufficient time available for students to learn specific content areas in greater depth should they wish to do so. Further, this quotation suggested that some students believed that a degree of inflexibility existed in the schedule that prevented students from learning effectively and from possessing choice in their learning. Many students thought that this problem could be mitigated by ensuring that all materials for specific class sessions be made available to students well in advance of the session, which would allow students to keep on top of their courses and control how far ahead they wish to go in their learning.

Code 2: Choice about how to learn. This code was similar to the code for *choice about how to use my time*, but a subtle distinction between these two codes existed, such that I decided to separate them. For the code *choice about how to learn*, the café table discussions focused less on the time element, and instead on the pedagogical and curricular conditions that allowed the students to experience autonomy for how they approached learning. I first present items where students felt supported in their choice about how to learn. I then present elements where the students felt hindered in their choice about how to learn.

Several café groups discussed that they appreciated how some of their teachers provided options to the students at the beginning of class for the preferred activity in which to engage during that session. Several café groups discussed how the flipped classroom approach supported their autonomy because it allowed them to experience control in their learning. One group noted, “you can learn at your own pace in a way suitable for your needs.” Another group explained that flipped lectures were effective because the basic information was presented

outside of class time in ways that students could learn on their own using individualized approaches most effective for their learning preferences.

Many students in their café groups noted that they experienced autonomy in their learning when clear objectives were listed for the content they were expected to learn. Clearly stated objectives allowed these students to choose how to approach mastering the objectives. Similarly, other students noted that the availability of a wide range of resources beyond class notes or the required textbooks allowed them to experience choice in terms of how and what they learned. By providing clear objectives and expectations, and making available a range of resources, the students experienced autonomy for how they learned.

Several café table discussions centred on the topic of a “pass/fail” assessment system. This topic intersected within the code *choice about how students learn* and the code *choice for how students use their time*, which I explore in this section. In a pass/fail system, many courses use percentage grades to set the standard for a course pass or failure; however, on a medical student’s transcript the only information provided about academic standing in a completed course, is “pass” or “fail.” In order to understand the significance of this discussion point as it relates to theme of *choice*, I provide a brief context for the rationale for transitioning into a pass/fail system.

The pass/fail system was introduced to reduce student anxiety and excessive competitiveness among medical students who were essentially competing against one another for residency positions after medical school based on percentage grades. In this competitive environment, some medical students conducted themselves inappropriately in order to attain the highest possible grades, and lost focus on learning. Such negative behaviours were directed toward classmates (e.g., lack of cooperativeness and collegiality), and often affected personal

well-being (e.g., obsessive studying and little work-life balance), which were antithetical to the necessary competencies of a practicing physician.

Multiple café groups thought that the pass/fail system supported their autonomy by relieving the lack of control that students experienced by feeling like they had to achieve high marks. One café group explained that by having a pass/fail system, “[you can] choose what you want to study, learn about your passion.” Another group noted that the pass/fail system allowed them to focus more on understanding rather than memorization and numerical grades: “[You become] less of a ‘slave to grades/marks’. It makes learning more enjoyable.” When grades became the focus, students perceived that they had little choice about how they approached their learning. Similarly, one café group noted that a reduced focus on grades supported better self-directed learning and allowed students the choice to take more time to learn about a topic of interest or to take extra time to figure out a difficult concept rather than simply memorizing it. Many café groups thought that by removing the competitive edge and focus on grades, they experienced reduced anxiety and collaborated better with classmates.

The participants described multiple situations where they believed that they had a choice in how they learned; however, some felt limited in their ability to choose how they learned. One café group observed an inherent conflict between the concept of autonomy-supportiveness and their understanding of the definition of curriculum, which could affect students’ perceptions about their control over how they learned:

A curriculum by definition is non-autonomous. The basic idea of a curriculum doesn’t allow autonomy. We have to do $A+B+C+D\dots = MD$ [Medical Degree]. We don’t have a choice. How do we [*sic*] achieve $A+B+C\dots$ may be autonomous, but really these

autonomous decisions are minor compared to the bigger picture that we are all marching down an exogenously pre-determined road of Medical Education.

Consistent with the notion of an “exogenously pre-determined road,” several café groups discussed the concept of “feeling forced” or unnecessary “hoop jumping” as significant barriers to autonomy. Some groups thought that the high volume workload of medical school affected their ability to choose how they studied. Other participants explained that their attention and effort was often dedicated to projects, assignments, and assigned readings, which limited their ability to choose or focus on areas of greater need, or to more deeply explore subjects that were of personal interest.

Multiple café groups expressed frustration because they perceived that some assignments were “make work” activities with little direct relevance to medicine. Therefore, they felt forced to engage in these projects, which impaired their feeling of autonomy. Other café groups described situations where certain activities were presented as “optional;” however, if students did not engage in the activity, they lost marks or suffered some other negative consequence. One café group commented:

Having no choice in your learning opportunities is daunting in a scenario when you know you’re not actively learning, but you’re not allowed to leave, nor are you encouraged to find a superior learning opportunity. You’re stuck. You’re trapped...then you just resign [yourself to a] brutal day.

Most café groups noted that shadowing physicians in the clinical context was an educational highlight; however, they expressed frustration at being required to write a brief reflection after every shadowing experience. The students thought that providing reflections was a “make-work” exercise with which they felt forced to comply, which in turn deterred students

from engaging in these activities of high-perceived relevance. The students experienced a lack of control over their educational environment, which resulting in a feeling of impaired autonomy.

Several café groups focused on the issue of being “spoon-fed” information and how this impaired learner autonomy. The participants had two perspectives on this issue. First, many participants believed that when faculty spoon-fed information to students, it decreased motivation to learn anything beyond the information provided. One café group wrote, “when all the information is on the slides of PPTs [PowerPoints], it doesn’t give incentive to use textbooks. [However] Textbooks, and getting to use this self-directed learning style can support autonomy.” Other café groups noted that by being spoon fed, students relinquished opportunities to make mistakes and discover knowledge gaps. Another group believed they were being “coddled,” and that a spoon-feeding mentality hindered students’ realization of the responsibility they had as physicians.

The second conflicting perspective held by some participants described a preference for a more controlling learning environment. In other words, they preferred to be told what to learn, even if it meant a loss of autonomy. These individuals acknowledged that their personal desire to be spoon-fed impaired their autonomy for learning. However, their goal was to learn the material and they felt that the most efficient approach to learn that material was to be told what to learn rather than determining it as part of a learning process. This difference in student preferences for spoon-feeding was consistent with the notion that students fall in a spectrum related to their general causality orientations.

Code 3: Choosing learning activities based on interest. The participants perceived a greater sense of autonomy in their medical education experiences when they were offered choice

related to the extent of their engagement in some learning activities. By being given some control over their engagement, many participants believed that they were able to determine their career interests, or what content was valuable for them to learn for their future medical careers. Because the first two years of medical school are more heavily weighted on classroom learning and foundational knowledge, students often choose to allocate independent learning time to engagement in practical or clinically oriented activities. Such activities serve as a reminder as to why students chose medicine as a career. Personal interest and enjoyment of a specific area of medicine were the greatest determinants for choosing activities in which to engage. Participant listed shadowing, skills nights, clinical electives, community medicine experiences, and research opportunities as activities of personal interest in which students most commonly engaged.

A significant barrier that students faced when attempting to engage in activities of personal interest was the inadequate availability of preceptors or funding to support engagement. Multiple café groups noted that limited funding for research opportunities meant that many students were unable to engage in research despite having an interest. Other students wanted to participate in health-related community programs but were unable to because of limited positions. In cases of limited resources, accommodation of every individual was not possible, and although students acknowledged this challenge, those students who were not able to engage still perceived a loss of control and choice, which negatively affected their perception of autonomy.

Pre-Clerkship Theme 2: Relevance

The second major theme that arose during the café conversations about autonomy related to the concept of relevance. The participants believed that their autonomy was supported when could identify the clinical relevance of what they were learning or could relate their learning to

future clinical practice. Participants used the term “motivation” most frequently when they described the impact of highly relevant experiences. One café group described the importance of using clinical examples in teaching as, “a reminder of why we need to know this information – much more motivation to learn/remember when you realize the information you are responsible for will impact the health and well-being of your patients.”

Several café groups discussed the importance of the physical learning environment in supporting learner autonomy: “When subjects are taught in hospital. The reasons for learning are much more apparent and this makes me want to learn the material. Lectures seem outdated in comparison.” The analysis indicated that many café groups believed that clinical shadowing was one of the clearest examples of a physical learning environment that demonstrated relevance to future practice. The excerpts below provide the participants’ perspectives on its impact:

- [I] see how responsibility for patients/clinical outcomes hinge on how well I know the material.
- Shadowing motivates our coursework, reminds us of long-term goals, [allows us to] see people who love their job, [lets me see] skills I need to help patients. Now I want to learn those.

By engaging in shadowing activities, on-site clinical learning and learning through clinical examples, students described an intrinsic desire to learn content because these experiences were more interesting, and because they experienced a strong sense of responsibility toward their future patients. Participants felt that teachers who provided correlations with clinical practice supported their autonomy because the students recognized the relevance to their future practice.

Conversely, when participants felt that information was not clinically relevant or portrayed as important for their future practice in medicine, they questioned its value and experienced a loss of autonomy because they felt forced to learn that material:

- When info delivered is not important/related to [medicine] – don't feel autonomous/motivated – info [we are being taught is] for physiology students.
- When professors lecture super detailed info in their areas of study. Then we feel pressure to study information that may be irrelevant to the big picture in order to pass.

Several café groups expressed concern and frustration that the information in some of their classes was not up-to-date or was incorrect. The participants experienced a loss of autonomy because they knew that the out-of-date material was not relevant to the current medical context, yet they had to learn it. When provided with wrong or inaccurate information, the students described a degree of mistrust for their teachers and their learning experience, which affected their self-determination. Trust is an important element in relatedness, one of the three basic needs of self-determination, which I address under the theme *Relatedness*.

Pre-Clerkship Theme 3: Guidance and Support

The third theme in my exploration of medical students' perspectives of autonomy-supportiveness in medical school focused on the importance of and participants' desire for guidance and support. Many of the café groups discussed the importance of guidance and support, and during the large-group discussion, the cohort of participants agreed that a degree of guidance and structure in the learning process supported autonomy more effectively than greater independence. Within these conversations, the participants made an important distinction between autonomy and independence, which I now present.

Code 1: Support and structure. The medical school curriculum at the University of Saskatchewan included independent learning time for medical students into the weekly timetable. No mandate for how the students use this time existed. Teachers and staff encouraged students to use independent learning time to engage in academic activities (e.g., reviewing, studying, or shadowing); however, students chose how they used that time. The students expressed satisfaction with having independent learning time, but many café groups expressed a desire for the time to be more structured, “free time can be valuable if we are aware of options to use it to pursue our goals.”

Regardless of the presence of independent learning time, or if teachers encouraged self-directed learning, some café groups believed that because medicine is a profession with a unique body of knowledge, skills, and attitudes, they required some guidance in order to be successful:

[Faculty] mask autonomy as “self-directed learning” [but] you can’t teach yourself medicine, you need to be supported through it. Doesn’t help students who feel lost and have no control. Obviously you need to study on your own time, but for example, having a respectable, dependable source of info takes a bit of the stress and anxiety off the students.

During these conversations related to students’ desire for guidance, other students argued that, in some situations, too much guidance was provided, which restricted and hindered their autonomy. These perspectives were consistent with the student comments related to the codes, *choice about how to use my time* and *choice about how to learn*, in which students felt that when the curriculum or their teachers were too controlling they experienced a loss of choice. One group explained the challenge of the swinging pendulum between too much and not enough

autonomy by writing, “[There is a] delicate balance...between how much autonomy you do have, how much you would like to have, and how much you should have.”

World Café participants suggested that part of the challenge of supporting autonomy involved establishing an appropriate balance of support and guidance. The café discussions were directed at the need for teachers to manage this balance, but one café group acknowledged that autonomy and any desire for guidance was an individual construct as well:

[Individual] personality may dictate what type or level of autonomy is perceived as supportive – like some students need more rules/ guidelines/ objectives and feel autonomy...Others may prefer fewer objectives and feel autonomous when free to learn what they like as they like (this group likes structure!).

The majority of participants expressed a preference for a more supportive, structured, and guided learning environment as opposed to an open-ended, boundary-free approach to learning and curriculum design. One café group asked the question, “Do I really want absolute autonomy?”

Throughout the café group discussions in both the Saskatoon and Regina World Café events, participants found it difficult to distinguish between *independence* and *autonomy*. The students often equated independence with autonomy, yet they simultaneously discussed the importance of being provided with opportunities to choose the amount of independence they were given from their teachers. During the large-group summary discussion of autonomy, the issue of independence versus autonomy arose. The participants asked me to distinguish between these two constructs. I discovered that the distinction between independence and autonomy was a revelation for many of the participants and an important concept in this research, which I discuss in Chapter 5.

Code 2: Autonomy as a continuum. As presented in *Code 1: Support and guidance*, participants expressed a preference for a more guided and supportive approach to autonomy and learning. In the large group de-briefing session about autonomy, the students discussed the current medical program structure, and many learners felt that autonomy and independence were “front-loaded” in the pre-clerkship with less autonomy in the clerkship. These learners thought that the amount of autonomy should be flipped because students need more autonomy as they progress in the program.

Another participant agreed and explained that the reason more autonomy was needed later in the program was because the level of sophistication for learner autonomy changes. This participant explained that the early stages of medical school focused more on foundational principles and students’ knowledge base was less complex; therefore, the students required less autonomy and more guidance. In the upper years of the program, the learning was more sophisticated and the learners held more complex knowledge; therefore, the students needed more options (i.e., more autonomy) to address their learning needs.

Another participant argued that although this model of progressive autonomy was reasonable, some degree of autonomy in the early stages of the medical program was important because, “there may be times when we don’t want to be in class, but are told to be there, which significantly impacts our feeling of autonomy.”

Code 3: Learning from mistakes. This code aligned with the code *support and structure*; however, the focus of the conversations related more to how effective support and guidance facilitated learning, specifically the learning that happened when learners made mistakes. Café groups expressed significant appreciation for teachers who encouraged students

to work independently and to not be afraid to make mistakes, particularly when it occurred in a supportive, encouraging, and guided environment:

- Professional skills sessions [support autonomy] where the preceptor gets you to do a history/physical exam alone to see where your skills are at and if you are proficient or deficient in areas. I am more motivated when in a real life like situation I find I am deficient, I then seek to correct this; when four of us are doing an interview, you can't fail because others are there to fill in the blanks.
- When given autonomy in combination with pressure/high expectations eg) being sent in alone to see a patient – I rise to the occasion. Learn more [because] of good things you do correctly, learn even more when you miss something entirely.

Participants felt that the balance of independence with support, positive encouragement, feedback, and guidance ultimately supported their autonomy and created the ideal context for learning motivation.

Pre-Clerkship Theme 4: Autonomy-Supportive Teaching

Several café groups discussed the importance of effective teaching practices for fostering learner autonomy. Specifically, participants focused on the impact that ineffective teaching practices had on learning and their feeling of autonomy. Many café groups felt that traditional forms of lecturing (i.e., a lecture with no active learning) hindered their autonomy because they perceived that they had no active role in learning, and no control over their learning, such that the experience was a waste of time. The loss of autonomy was compounded when students were made to feel that they must attend these sessions for fear of a punitive outcome. The participants indicated that they wanted to be active participants in the learning process regardless of the teaching method used.

The participants believed that their autonomy was hindered by a disconnect or a lack of communication among teachers about the subjects and content being taught in the curriculum. Participants expressed frustration when teachers provided a lecture and commented that, “I have no idea what you guys know about this”, or “I don’t know if you’ve been taught this yet.” The students then felt they were trapped in that learning experience, and that they were at the mercy of that teacher.

In the large group de-briefing, a discussion occurred regarding the impact that preceptors and teachers had on learner autonomy, particularly when preceptors or teachers hinder autonomy. One participant said, “when autonomy is stifled or when preceptors don’t let you be autonomous, you ‘shut down’, kind of like, put up your arms and say ‘whatever’, just tell me what to do, and [then you] stop thinking.” A different student explained that, “stress comes from not having autonomy, for example, the system says ‘you must do “y”’, but I would be better off reading “x” or doing “z” than doing “y”, which is really stressful.” Therefore, the loss of autonomy also contributed to increased levels of distress in students, which affected their well-being.

Autonomy Codes Unique to the Regina Cohort

The similarity of autonomy experiences for the Saskatoon and Regina cohorts was noteworthy. However, given the nature of the distributed education program, one striking difference in the experience of the Regina students existed that impacted their autonomy in a unique manner. Many of the teachers in the University of Saskatchewan program were located in Saskatoon and their lectures were live-feed video conferenced to Regina. As much as the technology allowed, the students in Regina received a close to equivalent experience. For example, they saw lecture slides and images on a screen, they were able to see and hear the

teacher, and they were able to ask questions during the lecture just like students in the Saskatoon cohort.

The Regina participants perceived that the most significant obstacle they faced was that after a lecture ended they were unable to engage with their teachers in a less formal manner. For example, they explained that they were unable to approach their teachers face-to-face to ask additional questions after class to quickly clarify a question. They could not easily set up meetings with teachers review areas of difficulty. Therefore, the Regina students felt disconnected and isolated from their teachers because of this lack of interaction. These students experienced a loss of autonomy for their learning.

Autonomy Codes and Themes Unique to Clerkship

A number of clinical clerks were present for the World Café events in both Saskatoon and Regina. This perspective was important to capture, because clerkship offers a different experience than does pre-clerkship. The interaction with preceptors and patients is more intimate and clinically oriented. In clerkship, students are immersed in the clinical environment and much of their learning happens while working rather than occurring in the classroom or while studying notes and textbooks. I expected that clerks would have unique insights and experiences that would inform the understanding self-determination in medical students. Many of the themes were similar from pre-clerkship to clerkship; however, the experiences that supported the construction of the themes for clerks were unique.

With initial analysis of the clerkship experiences, I discovered some disagreement among the clerks about the amount of autonomy that students have during clerkship. Some clerks believed that clerkship allowed them to tailor their learning experiences through electives, and gave them the ability to choose, based on interest, which clinical learning experiences to focus

on in greater detail. There appeared to be a more common perception among the clerks, however, that the amount of autonomy actually decreased upon entry into clerkship. One café group wrote:

[We] lose autonomy from pre-clerkship when we enter clerkship. Do we gain it back in residency? Post-grad? Practicing Physician? [There is a] lack of true choice in electives. With the increase in student numbers, we can't choose patients. We have inflexible schedules, long hours and can't write orders. The impact – we feel jaded – the work put in is not equal to the product.

With the following concepts and themes, I describe in more detail the contrasting perspectives related to the amount of autonomy supportiveness clerks perceived that they received and why the clerkship participants perceived such differences.

Clerkship Theme 1: Responsibility

The clerkship participants believed that the most autonomy-supportive preceptors gave responsibility to clerks. They shared experiences of times when they were asked to manage a patient on the clinical ward with complex care needs, to complete and present consults for preceptors, or to write orders in the chart for a patient. This increased responsibility taught the clerks a number of things including, the importance of their role on a team, the responsibility associated with having “their own” patient, the need to be able to use their knowledge to problem solve, the knowledge required to manage specific health conditions, and the importance of providing quality care to patients. The increased responsibility and the feeling of responsibility toward the patient provided a significant source of autonomy and learning motivation for these clerks.

Instances occurred during clerkship rotations where preceptors failed to relinquish control of patient care to clerks or did not make clerks feel like they were part of the team, which resulted in considerable frustration. One café group wrote, “we need to feel like a contributing member of a team – we need to feel like our day is productive.” Another participant in a different café group wrote, “when [I am] part of a team I feel greater autonomy because my opinions and ideas are valued and important. I want to learn more.” One participant noted that when clerks were not made to feel that they were part of the team it became more challenging to engage in learning because of the feeling that no one would expect the clerk to know anything anyway.

Another common challenge expressed by the clerkship participants related to concerns about the inconsistency of responsibilities and expectations related to frequent transitions to different preceptors. Because clerkship is rotation-based, students must frequently change preceptors, and most preceptors do not know the learner from either an academic or a personal perspective. Therefore, many clerkship participants experienced frustration when they had to continually recalibrate their expectations for responsibilities with each new preceptor. This frequent preceptor turnover affected their sense of autonomy because their new preceptors often gave fewer responsibilities at the beginning of their interaction.

Clerkship Theme 2: Pursuing Interests

Another important autonomy supportive element for clerks related to their ability to pursue specific interests during their clerkship, which included opportunities to engage in elective rotations of personal interest, and opportunities to pursue interests within specific rotations. During clerkship, students must complete mandatory rotations in core specialties in medicine. Additionally, time is allocated in the curriculum for electives, where students can

choose to work in and learn about specialty areas of medicine. The selection of an elective experience is often based on personal interest in a specialty area, but it may also be based on a personal desire to learn more about a specialty area because of its importance for future practice, or because the student wishes to improve a certain skillset. Regardless of the reason for choosing the elective experience, clerkship participants perceived that being given the opportunity to choose areas of interest was essential in supporting their autonomy as learners because they felt that they had the freedom to choose their experiences.

The clerkship participants also appreciated when preceptors acknowledged their personal interests. For example, clerks shared experiences about core rotations outside of their personal interest, and how much they appreciated when preceptors took time to learn their interests and tailored the experience to suit the student's interest, rather than forcing the student to conform. Other clerkship participants appreciated when preceptors encouraged them to research and present clinical topics that were of personal interest. The clerks who experienced this flexibility believed that their autonomy was supported because they experienced a degree of support and control over their learning experience (i.e., they were active agents in the experience) rather than passive recipients with no input into the direction of the learning experience.

The students described these active agent experiences as beneficial; however, more clerkship participants described experiences of little engagement, suggesting that these active agent experiences were not the norm. Other students experienced significant rigidity from their preceptors during their rotations in terms of the types of experiences offered. These clerkship participants felt embarrassed and afraid to mention their clinical interests out of concern that the preceptor would impart judgment on them and their interests.

Clerkship Theme 3: Feeling Forced

I found that choice was a significant theme for pre-clerkship students. Although the concept of choice was the same for the pre-clerkship and clerkship students, I chose to separate the two student cohorts because the issues that affected choice for the two groups were unique particularly in situations where the clerks perceived little choice, and described themselves as “feeling forced.”

Code 1: Can’t say no. The clerkship participants shared several examples of clerkship experiences where they felt unable to say “no” to a preceptor for fear of the potential negative consequences, which included concerns about negative evaluations, perceptions of laziness, and perceptions by the preceptor that they were criticizing authority. One clerk explained, “There is a general idea that the JURSI [clerk] can never say no. This will strain relationships, give the wrong impression and imply a lack of motivation. It could also be reflected on evaluations.”

The analysis revealed two significant determinants for this perception of the inability to say no. The hierarchical relationship between clerk and preceptor was the first determinant. Clerkship participants observed a clear hierarchy between teachers and students. They regarded this relationship as a natural phenomenon, but perceived it to be counterproductive. One café group wrote, “the high power difference between student and staff creates the inability to say no or criticize superiors.” Some clerks did not want to appear to be a “bother” by asking to switch patients, requesting to engage in different learning experiences, telling a preceptor that they were not comfortable doing a procedure, or asking to go home post-call. Whether this perception of inability to say no was assumed by students or a real phenomenon, these clerks experienced a significant loss of personal agency as result, which impacted their learning experiences.

The second determinant that influenced students' perceptions about their ability to say no was the constant evaluation of clerks and the subjective nature of the evaluations. They perceived that they were constantly being evaluated, but not in a way that supported their learning. Other clerks noted that the evaluations were too subjective, inconsistent, and were more like a judgment against them as opposed to a means for constructively supporting them in their training. Because many clerks perceived this sense of judgment, they were cautious about how they interacted with their preceptors for fear of being perceived as incompetent. One clerk wrote, "Constant evaluations will limit you because you are afraid to ask questions and then get evaluated on a 'lack of knowledge'." The paradoxical nature of their relationship with preceptors and the evaluations resulted in frustration for the clerks.

Code 2: CaRMS and career decisions. The Canadian Residency Matching Service (CaRMS) is the centralized service to which medical students submit their documentation when applying for a residency in Canada. CaRMS organizes all aspects of the application process and is responsible for "matching" students to their residency program of choice once students and program have submitted their respective rank lists. The application and matching process is quite arduous and stressful for the students not only because of the work involved, but also because matching to a residency is a defining moment in their medical career.

During the café conversations, many students expressed a perceived loss of autonomy in their learning experiences because many of their learning activities had to be directed toward being successful in the CaRMS match rather than focusing on the academic benefits of the learning experiences. Similar to code *can't say no*, the students believed that they needed to conform and avoid asking questions for fear of receiving a poor evaluation, which would be detrimental to their application.

The clerks believed that considerable time and effort went into learning, applying to CaRMS, planning electives, meeting with preceptors, and preparing for interviews; yet their medical careers came down to a numerical matching process. They expressed significant concern regarding the lack of control in the outcome of the match process, which created a sense of helplessness for many clerks and affected their autonomy and motivation.

Clerkship participants also expressed concern over feeling forced to make career decisions early in the medical training. One student wrote, “You are forced to make a career decision ASAP, which forces you down a certain path before you are completely exposed to all specialties.” This pressure to decide was particularly relevant in competitive specialty areas, where a participant wrote “[you feel like you] must take all electives in “x” specialty if you want to match, especially if in a competitive residency.” Such pressures to comply with the requirements of the matching system and to make premature career decisions affected these learners’ perceived autonomy, which in turn impacted their motivation to fully engage and learn from their experiences.

Code 3: Lack of scheduling freedom. The clerkship participants expressed concern over the inflexibility of their core rotations, long working hours, and call expectations. Some clerkship participants expressed frustration over the inability to schedule or plan for personal or life situations. The students specifically noted the challenges of trying to arrange personal health care appointments, or other domestic activities (i.e., vehicle or home repairs). They felt that little opportunity to plan these activities existed because they perceived that they were expected to be in the hospital or clinic at all times. The clerks explained that this frustration existed because their work hours often extended beyond most regular business hours. Therefore, some clerkship participants felt forced to attend to clinical duties, and experienced little control over their

personal lives. Such pressure not only impacted their autonomy, but it also impacted personal well-being.

Clerkship participants understood the importance and usefulness of being on call for the purposes of seeing many patients and improving their skills, and because of the social responsibility of the profession. However, many participants expressed concern about the perceived expectations that they should continue to work when post-call. They felt that post-call clinical work was a “waste of time” and unsafe because they were sleep-deprived and felt they could not make reasonable decisions or learn effectively. However, as discussed in the code *can't say no* many clerks believed that they could not request to go home for fear of being perceived as lazy, not motivated, or incapable. Consequently, they experienced a loss of autonomy and hindered motivation.

Summary of Autonomy

Whether in pre-clerkship or clerkship, participants believed that a key element in supporting autonomy was choice; choice about how to use their time, about how to approach studying, and about the activities in which they could engage. Although the participants appreciated being given choice, they also acknowledged their fledgling professional knowledge and identity, and as such, they appreciated receiving guidance and structure to support their professional development. For clerks, this also meant being given the opportunity to harness increased responsibility but in a structured and supportive environment. Students needed clarity to distinguish between the constructs autonomy and independence. Content relevance and clinically relevant experiences were critical aspects to support learner autonomy and motivation to engage in the learning process. Effective teaching was also an important supporting element for learner autonomy. Students often experienced the greatest frustration when they felt as

though they were being forced to engage in activities that appeared to have no context or relevance to their medical education.

In the next section, I present the results of the students' experiences of competence in the medical program. Competence is the second of the three basic psychological needs that support an individual's self-determination.

Analysis of Basic Need 2: Competence

The second topic of discussion during the World Café event explored the participants' perspectives of competence during their medical education. I asked the participants to discuss experiences where their competence was supported and hindered, and how this impacted them as learners. I present the themes below with headings and I present the codes that contributed to development of the themes as subheadings.

As I collated and organized the data, it became clear to me that although students expressed many of their perspectives related to competence using competence-supportive language, the stories that they shared were based on experiences where their competence was hindered. Therefore, the students appeared to understand the necessary elements to support competence, yet their experiences were inconsistent with this understanding.

Theme 1: Feedback

The participants emphasized that effective feedback was necessary to support learner perceptions of competence. The students demonstrated an understanding of both effective and ineffective feedback. They appreciated feedback that was timely, constructive, specific, non-judgmental, and helped them to learn from their mistakes. When the students received effective feedback they perceived that this feedback supported their develop as physicians-in-training, which supported their confidence in their abilities.

In this section, I discuss three major elements related to the students' perspectives on feedback and their importance in supporting learner competence. These three elements included: (a) the participants' expectations for effective feedback, which were subdivided into expectations for clinical learning, and expectations for classroom learning and assessment; (b) the participants' perspectives of the impact that effective feedback had on their personal feeling of competence; and (c) the participants' perspectives on how ineffective feedback hindered their perceptions of competence.

Effective feedback. The participants spent a significant amount of time in their café groups discussing their perspectives on the key elements of effective feedback and the impact that effective feedback had on them as learners. In medical education, the learning environment can be subdivided into two major contexts, the clinical and classroom learning contexts. The themes related to feedback in each context were unique; therefore, I present the data for each context separately.

In the clinical learning context, students are typically assigned to groups of four with one preceptor per group, and the purpose is to teach students essential clinical skills for communicating with, examining, and managing care for patients. The clinical learning context is a more intimate learning environment and allows the preceptor to closely observe and monitor student progress. Students noted the importance of regular, specific, and purposeful feedback in clinical learning contexts. Participants discussed the usefulness for knowing *why* they were learning a skill, not just *how* to perform it. If the students were wrong, they wanted to know why they were wrong so that they could learn from their mistakes.

Many participants expressed frustration with the type of information provided in the student evaluation forms. They believed that the forms were too generic and artificial with

inadequate specific feedback. Students understood that check boxes for ‘meets expectations’ indicated successful progress; however, they believed this type of evaluation prevented them from taking away meaningful feedback from the experience. The students noted that even though they met expectations, specific feedback could help them to focus on areas for continued development, and a check-box approach to evaluation would not meet this need.

The participants perceived that more written comments and fewer checkboxes would help them to learn from their mistakes and to make appropriate adjustments. Participants also felt that preceptors might find completing evaluations easier, if they had opportunities to write comments in the student feedback and evaluation forms rather than filling in checkboxes on generic rubrics. Participants believed that an effective way of supporting specific and purposeful feedback was to video-record, watch, and receive feedback on their clinical encounters. These videos also supported self-reflection and evaluation.

Students appreciated both formal and informal approaches to providing feedback so long as the feedback was timely and preferably face-to-face. They perceived feedback from preceptors to be more effective when presented in a positive and encouraging environment. Regardless of the type of feedback (positive or negative), the students wanted the feedback presented in a positive, encouraging, and non-judgmental fashion where the intention was to teach and support the students.

The participants placed significant emphasis on the importance of receiving constructive feedback (i.e., feedback that informed students about areas of relative competence and incompetence and provided direction to the student on how to improve). The desire for constructive feedback related closely to the participants’ comments about focusing feedback on teaching and supporting, not judging and undermining. The participants felt that constructive

feedback could come in written or verbal formats; however, as noted, the participants preferred face-to-face feedback.

Participants noted that feedback from multiple sources was also useful for their clinical learning. Suggested sources of feedback included peers, residents, physicians, other health care providers, and patients. The participants believed that multi-source feedback provided a more comprehensive understanding of their level of competence. Their concern regarding multi-source feedback related to a perceived potential for lack of continuity of feedback. Therefore, the participants preferred to have a single preceptor provide feedback because they believed that the preceptor became better acquainted with the student, and understood the learner's capabilities, which enabled better feedback. The participants noted that too many preceptors over a short period combined with inconsistencies in each preceptor's teaching approaches hindered their perception of competence because they believed that the preceptors were unable to effectively determine competence. The participants also experienced hindered perceived competence because of inconsistencies in different preceptors' teaching.

In the classroom-learning context, the participants believed that feedback on progress of learning was often inadequate, which hindered their developing perceived competence. The participants sought more frequent assessment and feedback to help them gauge their progress in learning and understanding the content. One student commented that, "[Microbiology] had good support with quizzes that are not for marks, but give feedback on how we are doing."

The most common topic of discussion among café groups during the conversation on competence related to inadequate feedback from assessments. Many café groups believed that receiving *immediate* feedback from exams would benefit their perception of competence. Specifically, the participants wanted to review their exams to find out which questions they

answered incorrectly in order to learn from their mistakes and develop greater perceived competence. One student wrote, “Exam policies need to be in place. If we get [answers] wrong and can't learn from our mistakes we feel very incompetent.” Another student wrote, “Without knowing what questions we got right or wrong, we become incompetent does because we don't know what we know and what we don't know.”

Students believed that receiving effective feedback contributed to their growth as learners, and made them feel capable of achieving their personal goals or the required task, which motivated them to achieve more, particularly if they received specific feedback about areas of knowledge and skill deficiency. One participant wrote, “I like knowing where I am incompetent because it identifies a weak point for me to build on.” The participants noted the counterproductive nature of feedback from teachers who simply told students they were “wrong” without any guidance or specific feedback regarding how they could improve.

Impact of feedback. When students received informative and constructive feedback, it made them feel confident in their abilities. Participants noted that they were less afraid to try new things, engaged more fully in their learning, and asked questions of their preceptors, because they believed that they would not be judged. Participants also noted that they enjoyed the experience better, learned more, and ultimately improved their knowledge and skills to a greater degree compared to if they had received little or no feedback. Other café groups noted that they experienced a sense of empowerment when they received effective feedback. Further, some groups discussed the affective impact of effective feedback. These students described feeling happy and more positive, which gave them more motivation to improve their skills and to learn more.

When students were not provided with feedback, they described feeling “lost,” confused, and unsure about their role, expectations, and goals. When they were provided with negative, non-specific, and judgmental feedback, they lost confidence in their abilities and believed that they were not capable of achieving the task. Thus, their motivation to engage and learn was hindered.

Theme 2: Positive Environment and Guidance

Several café groups stressed the importance of establishing a positive learning environment with appropriate guidance as essential elements in giving and receiving feedback and developing perceived competence. Students noted that preceptors who encouraged learners, avoided judgment, supported, guided, and believed in a learner’s ability were most effective at supporting learners’ perceived competence. One café group wrote:

A positive learning environment helps because if you’re in a negative one (ie.[sic] made to feel stupid) you won’t want to test the limits of your competence. Thus in the positive learning environment you’ll push the limits of your knowledge and ask questions – thus learn.

Café participants provided examples of effective guidance that teachers could provide to support increased learner perceived competence:

1. Orientation: Café groups discussed the value of providing basic orientations to new clinical and classroom learning experiences. The participants believed that when they understood the expectations, they were less distracted by the non-educational aspects of the learning environment and could focus more on learning.

2. Access to information: Café groups discussed the importance of being provided with or having access to information and resources to support their developing competence. Access to

such resources allowed students search for answers to challenging problems or areas of knowledge deficiency. They believed that access to quality resources also allowed them to pursue areas of personal interest to develop competence in those areas.

3. Sense of Security: Many participants commented on the importance of knowing that their preceptors were available to provide guidance if required. The participants desired a degree of independence, but they wanted assurance that their preceptor would be available for support, answer questions, or take over if the situation became too difficult or the students were unsure about how to proceed. In particular, many participants experienced discomfort with “being thrown in blind” with no previous exposure, or being asked to perform tasks in which they were unfamiliar or uncomfortable performing. Other participants perceived that their sense of security developed from a safe learning environment where they were free to ask questions, make mistakes, or address concerns without being judged or poorly evaluated.

Café groups discussed the negative impact that preceptors had on students’ perceived competence when they provided poor feedback. Examples of preceptor actions that hindered learner competence and contributed to a negative learning environment included: (a) preceptors who belittled and judged students, (b) teachers who overtly compared students, (c) preceptors who provided little constructive feedback or only negative comments; (d) preceptors who diminished students’ self-confidence by calling them out in class or in small groups.

The most significant and consistent example of a negative learning environment and destructive guidance provided by café participants was a specific action the students called “pimping.” The participants defined pimping as instances where preceptors continuously asked a student questions that were either purposefully, or perceived by the student to be purposefully obscure and beyond the student’s knowledge level in order to make the student feel incompetent

or stupid. Pimping was a practice that the participants described as commonplace in their medical education. The consequence of these negative interactions between preceptors and students was that the students experienced diminished confidence in their abilities and less capable of success, which resulted in a decreased desire to independently improve their knowledge and skills or to seek support to help improve their knowledge and skills. One participant wrote, “Pimping does not work. [Preceptors should] ask questions but [they] should be productive. Make your questions increasingly difficult but relevant.” Another participant described the pressure that pimping placed on learners, “Questioning/pimping until you crack is terrible and bad for competence because you become so unsure about what you are confident in, and then you function way below the level you could be functioning at.”

Participants wanted their preceptors and classroom teachers to provide reassurance that they were improving their knowledge and skills. Examples provided by the café groups of preceptor actions that provided reassurance included (a) being supportive and encouraging students to develop their knowledge and skills, (b) teaching students at an appropriate knowledge level, and (c) expressing belief in a student’s abilities.

Many café groups discussed that peers were also a strong source of support and encouragement, particularly in small group settings. Café groups noted that peers were able to teach and explain concepts more effectively, work better as a team toward a goal, exchange ideas more freely, and not feel inhibited. The participants believed that these elements supported their perceived competence. Moreover, the participants noted that the process of teaching others supported individual perceptions about competence. Examples of café group statements that supported these perceptions included:

- Group learning [supported competence] by being able to explain and teach others and learn from others.
- In small groups, you can challenge to an appropriate level to use the competence but not ruin confidence.

Café groups noted that effective guidance also involved managing expectations, which involved providing clarity of expectations and establishing an appropriate level of expectations for students. The participants wanted clear and specific performance standards for clinical and classroom contexts. For example, the students wanted to be provided with evaluation criteria for courses and clinical rotations from the outset of the course or rotation, in order to establish their goals and work toward achieving them. For the same reason, café groups also discussed the importance of listing clear learning objectives for all learning activities.

Café groups believed that effective guidance involved provision of graduated learning experiences. Participants discussed the importance of continually building on their knowledge throughout medical school. They expressed frustration when they encountered learning gaps because their teachers did not know their knowledge level. The participants appreciated being given smaller, more manageable clinical responsibilities to start, and as their confidence in their knowledge and skills increased, being provided with graduated increases in responsibility. Participants experienced the greatest discomfort when they were immersed clinical situations that were “beyond their comfort zone.” Many participants appreciated being challenged, but emphasized the importance of achieving a balance between being challenged and being overwhelmed.

Theme 3: Practice and Application

During the café conversations related to competence, the third theme that developed was the importance of practice and application as a supportive element for students' perceived competence. Clinical clerks and pre-clerkship students believed that their perceived competence was supported when they were provided with opportunities to practice and repeat their knowledge and skills in both the clinical and classroom learning environments.

Café groups discussed the usefulness of writing non-graded practice tests to support knowledge mastery and to help students feel comfortable with writing high-stakes medical school examinations. The participants also discussed the importance of applying their knowledge through clinical case problems. When the participants applied their knowledge to meaningful contexts, they believed that they learned the material better. However, one café group perceived that the opportunities to engage in application were insufficient, and that information transmission was over-emphasized: “[There is a] failure to reinforce learning, we get a barrage of information which is seldom reinforced – [a] never-ending cycle of forgetting information.”

The participants expressed significant appreciation for the Integrative Case sessions that occurred intermittently throughout the undergraduate program. The integrative cases are small group sessions designed to facilitate application of concepts taught in the program's courses, to develop critical thinking and clinical problem solving skills, and to integrate knowledge from across courses and disciplines. The participants stated that the integrative cases supported their perceived competence by providing them with practice working through case problems, and by applying their knowledge to realistic clinical problems. One café group wrote, “Integrative cases help competence. The “aha” moments increase confidence [and you] integrate all information

and you realize what is important.” Another café group wrote, “We don’t feel that exams test our understanding, which makes us feel competent. It’s well done in cases [by focusing on] understanding, not memorizing facts.”

Many café groups wrote about the importance of being able to practice clinical and procedural skills, and apply their clinical knowledge repeatedly through clinical cases. Café groups discussed the importance of practicing differentiation between normal and abnormal. Some groups noted the importance of practicing critical thinking and problem solving because they believed that those skills were essential for practicing physicians. Still other groups appreciated being able to practice with a preceptor in a clinical context, because they believed that they were making a contribution, which supported their perceived competence. Participants expressed a desire for a safe learning environment to practice their skills. They defined a safe environment as a place where students could make mistakes and not feel bad, stupid, or risk lives; where they could receive direct feedback; and where they would not be graded or judged. Examples of such safe learning environments included simulation labs, or when working with volunteer patients.

The participants identified that practice and feedback must be concurrent activities if they are to support competence. Further, several café groups believed that students required adequate time in class or in clinical rotations to practice and apply their knowledge and skills, and to receive feedback necessary to support their perceived competence. One café table noted the challenges associated with attempting to remember information that was taught once or a skill that was demonstrated once. They believed that when teachers provided adequate time for learning and practicing their skills, they experienced better recall and performance and greater perceived competence.

Theme 4: Information Overload/Scope of Learning

The first four themes on competence were framed in terms of competence supportiveness (i.e., providing feedback, guidance, positive learning environments, practice and application), how they were supportive, and the impact on students when they were absent or not effectively implemented. The theme *information overload/scope of learning* was unique in that the participants framed and discussed it as competence hindering. The participants described feeling overwhelmed by the amount, depth, and breadth of medical knowledge that they were required to learn, which hindered their perceived competence.

Several café groups discussed experiencing tensions when they were expected to learn large amounts of information, but perceived that the information was not clinically relevant. Participants used words such as insane, futile, frustrating, overwhelming, physically draining, in over our heads, and overload to describe their learning experiences related to learning such large amounts of information. Examples of Café group remarks related to information overload included:

- Excess of information that is expected to be known but is not useful – clinically makes us feel incompetent.
- Not learning what is important leads to loss of motivation because you don't retain everything even after studying and becoming frustrated.
- Overwhelming information overload is physically draining, [you] feel incompetent for the entire year.

Participants listed examples for why they felt that content was not relevant including: (a) content that was out-of-date and not reflective of current practice; (b) content that was not directly applicable to clinical medicine; or (c) content that might be relevant, but not directly

applicable to a specific clinical context. One café group described a situation where a large list of drugs for the management of specific condition was taught, but the teacher failed to provide guidance on how to select the appropriate drug. The students explained that they simply had to memorize the list. In those situations, the students described feeling overwhelmed by the volume of material, frustrated with the decontextualized and perceived irrelevant nature of the content, which they noted hindered both their perceived competence and autonomy. One café group wrote, “Such an insane amount of information makes you feel incompetent and less motivated.” Another group wrote, “thinking about the scope of medicine and trying to learn everything [hinders competence].” The participants noted significant concerns about content management, how it affected them emotionally, and how it impacted their perceived competence.

In contrast, café groups acknowledged that effective content management practices by teachers supported perceived competence, “when prof’s focus on what you need to learn to be a good clinician (not too many unnecessary details) – boil down to important, relevant, related things.”

Theme 5: Confidence and Competence

During the large group discussion the participants expressed concern related to the difference between *being competent* as indicated by the various measures of assessment, and *feeling competent* in their abilities (i.e., confidence). The participants discussed the subtle distinction between competence and confidence where they described competence as something to attain and confidence was an individual’s perception of ability. Participants noted that, at times, these two constructs were at odds and that confidence had a significant influence on competence. Comments from café conversations and the large group discussions indicated that when confidence was low it caused students to engage in negative self talk (e.g., “I can’t do this,

I'm not good enough" and "I'm going to fail, this is going to be terrible") and to feel jaded, stressed, and anxious. Low confidence also resulted in a lack of energy to pursue areas of either perceived or actual low competence.

Some café groups discussed the importance of achieving an appropriate level of stress or "nervousness" related to confidence. These café groups believed that being nervous or experiencing some stress supported their motivation to learn more or practice a skill to improve their competence. Other café groups discussed the role that teachers played in supporting learner confidence through (a) positive reinforcement, (b) encouraging students to try new skills, and (c) teaching without judgment. When teachers used these strategies, a reciprocal interaction between confidence and competence was created in which students described gaining enough confidence to engage in the learning process, which led to an incremental increase in competence, which in turn supported greater confidence.

Participants noted that time also supported confidence and competence. For example, many clerkship café groups discussed that the more time they spent in a rotation, the more they were able to practice and improve the skills specific to that rotation (i.e., increased competence), which increased their confidence. Conversely, many clerks noted that the rapid switching from rotation to rotation throughout clerkship negatively impacted their confidence.

Other café groups discussed the importance of the student's role in supporting both confidence and competence in learning. Participants most commonly discussed the importance of being prepared for sessions and being ready to engage in the learning activity. These café groups explained that when they prepared for a session, they felt more knowledgeable, which made them feel more confident going into the session. Because they felt more confident entering the session, they engaged better, which resulted in an increase in their overall competence.

Summary of Competence

The participants believed that a key element in supporting competence was feedback. Their perceptions about their ability to learn the material and to be successful was dependent on the timely, specific, and constructive feedback, provided by supportive and non-judgmental teachers. Participants acknowledged the value of multi-source feedback; however, they noted the importance of continuity of preceptors to ensure continuity of feedback, which in turn supported perceived competence.

Participants noted that receiving guidance in a positive learning environment was important for supporting their perceived competence. When students knew that their teachers were there to support and encourage them they were more willing to engage in the learning, explore opportunities, and make mistakes. They were more willing to engage when their teachers provided clear expectations and goals for the learning experience. When harmonized with effective feedback strategies, the participants experienced greater perceived competence.

Participants experienced greater perceived competence when teachers provided opportunities to practice and apply the knowledge and skills being taught. Students noted that practicing or applying their knowledge to one case or clinical situation was inadequate; therefore, time and repetition were important factors for supporting students' perceived competence.

Participants noted that a significant challenge that hindered their perception of competence related to curriculum content overload. The volume of material that students were expected to learn overwhelmed them, which negatively impacted their perceived competence. Participants perceived that some of the material was either irrelevant to the practice of medicine or was not presented in a clinically relevant manner. This perception hindered students' desire to engage in the learning experience. When the two elements of content overload and low

perceived relevance were considered together, they produced a significant negative impact on students' perceived competence.

In the next section, I present the results of the students' experiences of relatedness in the medical program. Relatedness is the third of the three basic psychological needs that support an individual's self-determination.

Analysis of Basic Need 3: Relatedness

The third topic of conversation at both Word Café events explored the participants' perspectives of relatedness during their medical education, specifically, the influence that relatedness with their teachers had on supporting their self-determination. Relatedness refers to the extent to which individuals feel that they are connected to or experience a sense of belongingness with other individuals and their community (Ryan & Deci, 2002). Three major themes developed that were common across both academic sites.

In the first theme, I arranged all codes that emphasized the actions of teachers that the participants believed supported relatedness between the learner and teacher. In the second theme, I arranged all the codes that emphasized the innate qualities of teachers that the participants believed supported relatedness between learners and teachers. The third theme addressed the participants' perspectives on the importance of a teachers desire to teach as a cornerstone for establishing relatedness between learner and teacher. Although most themes were consistent across sites, one feature was unique for the Regina site. I presented this unique theme under a separate heading. As an additional item, but one that was not necessarily a theme for relatedness, I present some of the participants' comments about the impact that relatedness had on learners in supporting their self-determination to learn.

Theme 1: Relatedness Actions of Teachers

In their conversations about relatedness, the participants emphasized the key role that the learner-teacher relationship played in supporting learner self-determination. Teachers applied many strategies to establish that critical connection with learners; however, through the process of categorizing these teacher actions, two major sub-themes arose.

Sub-theme 1: Teacher takes interest. Café participants believed that a key action that teachers adopted to build the relationship with learners involved taking an interest in the learners, both academically and personally. Participants expressed a desire for more teachers to make this effort to engage because the learners appreciated it and it provided a strong source of motivation. Some of the actions that students appreciated were relatively easy for teachers to adopt, while other actions required a greater emotional investment or investment of time.

Code 1: Common ground/ Takes interest in my goals. Café groups appreciated when their teachers made an effort to find common ground or goals. Students found this to be particularly relevant in the clinical environment. Many of the participants noted that finding common ground with preceptors could be as simple as recognizing that a student had an interest in the preceptor's specialty and supporting and encouraging the student in learning more about that specialty and to get the student excited about it. One café group wrote, "When the doctor recognizes your interest in one field, and they are also very passionate in that field, their enthusiasm and passion is contagious and inspirational." Such common ground created a "symbiotic relationship" where the student was "taken under a wing." The participants then felt they were a part of the team and "learning [became] a shared goal between the teacher and student." One café group wrote, "developing relatedness with a preceptor is motivating because

it allows you to see yourself as similar to them – can envision oneself as competent based on the relationship/similarity.”

Medical students must complete clinical rotations in key core areas of medicine (e.g., internal medicine, family medicine, surgery, emergency medicine, psychiatry, pediatrics, and obstetrics and gynecology). However, medical students typically develop specific interests in certain specialties of medicine outside of these core rotations. Participants believed that a preceptor could develop and strengthen relatedness by acknowledging learners’ clinical interests and tailoring the clinical experiences to those interests. One café group provided the example of a preceptor who directed clinical work towards clerks’ interests by sending clerks to perform consults that the clerks would find interesting.

In contrast to the motivation that establishing common ground created, the absence of common ground led students to feel excluded. One group wrote, “the ‘old boys club’ in medicine can be very intimidating and make students feel alone and alienated.” The students believed that such a learning environment hindered their motivation to engage and expend any effort to learn because they did not experience a connection with their preceptor.

Code 2: Getting to know me. Finding common ground related to supporting and developing a relationship regarding a learner’s interests within medicine. Participants also appreciated when their teachers invested more in the relationship and tried to get to know the students on a more personal level. Participants appreciated when teachers attempted to learn their names, to discover their personal interests, and to establish a deeper emotional connection. Below are examples of how faculty impacted students when they made an effort to learn more about their students, and suggestions for how faculty can make an impact:

- Feeling that preceptors/professors etc. have taken time to get to know even a little about me. Also when they are willing to open up about themselves.
- Know your students names and take interest in [their lives].
- Faculty who are open-minded, who want to help you, try to understand your situation, try to get to know you on a personal level (ie. [*sic*] know your name), respond to your email, give feedback on assignments.
- Faculty making an effort to get to know each student personally and develop an emotional connection. This made positive motivation to learn.
- I like when preceptors make an effort to get to know me as a person before beginning the medical and teaching relationship.

The participants emphasized the importance of faculty establishing this connection with learners. Café groups spent a significant amount of time discussing experiences with teachers who made little or no effort to get to know them, and learning contexts that did not support opportunities for teachers to try to get to know students:

- Teachers who don't take time to get to know students, actively teach, or learn your name!
- Lack of relatedness in large lecture setting; or really any didactic setting where the instructor treats information flow as being from instructor to instructee.
- Not interacting with professors at all gives us no chance of building relationships.

The revolving door of teachers and preceptors makes it difficult to relate

Code 3: Teacher tries to find out what you know. This code focused on the importance that the participants placed on teachers' efforts to discover their learners' level of knowledge. Several café groups noted the importance of teachers understanding the knowledge level of their

learners. During the large group de-briefing session on relatedness, the participants explained that when teachers took the time to uncover the knowledge level of their learners they supported relatedness with learners because they demonstrated they cared about the students and the students' learning experience. Conversely, the participants explained that when teachers did not take time to determine the learners' knowledge level, the learners felt unimportant and like they were a "hassle." Often it led to a mis-match in learning expectations, which further alienated the student and hindered motivation.

Subtheme 2: Caring and compassion. Café participants noted that another key action that teachers could take to build the relationship with learners was to demonstrate caring and compassion for learners, which was represented by being respectful, showing empathy, "going the extra mile" to help, and making students feel safe. Participants agreed that compassion provided a strong source of motivation. One café group wrote, "knowing that a teacher cared increased motivation to do well, want to improve competency." Another group commented, "having a relationship feels like support even when it isn't explicit and it isn't offered."

Code 1: Teacher goes extra mile. This topic was a consistent theme across café groups and was discussed at length by participants. The focus of "going that extra mile" was that when a teacher went beyond what was expected, the students experienced a connection with that teacher. They perceived that the teacher cared. The participants also explained that when a teacher went "above and beyond," the students wanted to reciprocate that effort made by the teacher. This desire for the students to reciprocate occurred because the teacher ignited their energy and enthusiasm. The students did not mention that their reciprocation occurred out of guilt or obligation. The following quotations explain what students believed constituted going that extra mile and the impact that it had on their motivation:

- Preceptors staying after hours. Anyone giving extra time which motivated us to learn.
- Preceptors who sign up for extra teaching hours to help out with pro skills.
- [Professors who] answer ALL of your questions and give you SO much enthusiasm and positivity motivates you.
- Teachers that go above and beyond – they are willing to put in the effort, so we are too.
- Preceptors staying after hours, going above and beyond sets this “energy spent” bar – feel motivated to reciprocate this effort.

Students believed that teachers’ efforts to support learners, demonstrated that they cared about their learners. This positive relatedness with the teacher generated a greater willingness to engage and acted as a source of motivation for the students.

Code 2: Respect. Another important element of the sub-theme *caring and compassion* was respect. Participants provided many comments related to the importance of establishing mutual respect as an essential element for building relatedness and supporting learner self-determination. One café group explained, “mutual respect is NECESSARY! Even though I (the preceptor) know more than you (the student), I believe you can get it too.” Another group wrote, “Respect is the primary aspect of relatedness that motivates me. [I feel] increased comfort – easier to push boundaries...feedback is more forthcoming and more believable/easier to accept when you feel related to that person.” Other café groups also noted how respect created a feeling of safety in the learning environment, which in turn made students feel more comfortable seek help when they needed it. One group wrote, “An approachable prof aids learning so students aren’t afraid to participate.” Another group noted that when a teacher showed respect it “limited their judgment of our shortcomings, but provided a way to fix them.”

For other café groups respect did not require the same level of emotional connection. Some groups discussed the importance of teachers respecting students' time and effort as means of demonstrating that they cared. For example, a number of café groups discussed a simple action such as ensuring that lectures do not go over time and respecting the 10-minute break between sessions to allow students to "recharge." Clerkship groups explained that preceptors could show respect by acknowledging the contribution that clerks make, "show thankfulness and respect regarding the time/effort invested."

Participants shared their feelings on the impact that disrespect from preceptors can have on medical culture, and on relationships, learning, and the learning environment:

A culture of "yelling" and putting others down and making others feel dumb has become accepted in the hospital, but this is not acceptable; when others make mistakes, reaming them out is not an effective way to fix mistakes and improve in the future.

This "culture" of yelling at students and preceptors' expectations of perfection negatively impacted relatedness between students and their preceptors, such that many students felt alienated, which not only affected their motivation, but also negatively impacted their well-being.

Code 3: Empathy. Participants experienced a greater sense of relatedness with teachers who showed empathy toward students. Participants noted that they felt more connected to teachers who remembered what it was like to be a student and could recall the stress and pressures that students experienced. Café groups described this understanding as a "sameness" that a student could connect to, which acted as a source of motivation to "keep going."

Theme 2: Relatedness Qualities of Teachers

Theme one of relatedness focused on action-oriented items that supported teacher relatedness with learners. In theme two I present the participants' perspectives of the innate relatedness supportive qualities that teachers possessed, which in turn supported learner self-determination. Some of the qualities were modifiable (i.e., the teacher could control or change these qualities, such as enthusiasm and humility). The participants described age as a non-modifiable quality that supported relatedness with their teachers.

Code 1: Enthusiasm and sense of humour. Participant conversations related to innate relatedness qualities of teachers centred on the enthusiasm of the teacher. One group wrote, "Prof's that are excited to teach. Their enthusiasm is contagious and makes you want to learn more on that subject." One café group discussed the power of passion and enthusiasm as source of relatedness and motivation, "When the doctor recognizes your interest in one field, and they are also very passionate in that field, their enthusiasm and passion is contagious and inspirational." During the large group de-briefing for relatedness many participants acknowledged that relatedness with a teacher influenced their developing professional identities and influenced which specialty they wanted to pursue. Participants noted that among the many factors for making a career decision, they often choose certain specialties because of the positive relationship that they established with a preceptor. Other groups discussed that enthusiasm served a higher purpose than its role in classroom motivation, "have [teachers] who want and are excited to be there. [It] shows us their career and medicine are still an exciting career."

Participants believed that humour played an important role in supporting relatedness, "Humour is humanizing! When [teachers] lighten the mood with a joke in class [it] makes me feel more comfortable and more likely to interact." During the large group de-briefing session,

many participants agreed that passionate teachers used humour to show that they cared about student learning, which in turn motivated students to exert extra effort to engage and learn the material being taught.

Code 2: Humanity and humility. Another common topic of conversation for many café groups related to the importance of “human” and humble teachers in supporting relatedness and motivation. Students believed that medicine became more “real” when they recognized that their teachers were normal people and could relate to students as equals. I provide examples of participant comments that demonstrated the importance of teacher humanity and humility as a key element in supporting relatedness:

- Seeing the struggle in preceptors/physicians. The realism helps you to know that they are human and that they struggle/overcome challenges through special techniques or just by pushing through. [It] still gives you hope.
- Medical preceptors [who] can be honest with their own struggles allows you to relate.
- Preceptors who show [a] human side – eg. [*sic*] If they admit they don’t know something and look it up for the next time, like we do. If someone won’t admit they don’t know, I close down and lose respect/trust in their ability and teaching.
- Teachers who are human beings; have a life; open and honest about who they are; mistakes that they’ve made, where you can learn from their mistakes.
- A professor who is humble levels the playing field, students are not afraid to ask questions.

The participants experienced greater connectedness with teachers who were honest about their struggles, admitted their knowledge limitations, were honest about their past mistakes. Teacher honesty and humility served as a source motivation for students because they perceived that

becoming a doctor was achievable. They also believed that they could fully engage in the learning process even if they made mistakes because they knew their teachers would understand.

Code 3: Age. Many café groups discussed the importance of teacher age as an element that supported relatedness. One café group wrote, “when your preceptors are closer to our age, they understand us better.” Another group wrote, “Younger professors point out the key points; know what you are going through; understand the system; [and] are more relatable.” Another café group explained that younger teachers are “relatable, literally – [they are] not far removed from us ... We respect them getting to know us [and] understanding our generation.” The students believed that a connectedness existed with younger teachers, which in turn made the students feel more comfortable to engage because they knew that these younger teachers remembered what medical school was like.

Unique Relatedness Experience for the Regina Cohort

The Regina and Saskatoon cohorts reported similar experiences of relatedness. However, the Regina cohort reported one unique experience related to the impact that learning in a distributed educational site had on learner relatedness with their teachers. Typically, teachers in Saskatoon present a large proportion of the large-group classroom teaching sessions. These teachers present the session face-to-face for the Saskatoon students and via videoconference to the Regina students.

The participants expressed frustration with distance learning because they believed that it made learning more difficult. The common word that many of the groups used to describe their experience was “disconnected.” One café group explained, “[video]conferencing often leaves us disconnected with the faculty in Saskatoon, if we are inspired by them we can’t shadow them because of the 256km drive [to Saskatoon].” The Regina participants expressed frustration with

the limited access to teachers for support. One participant wrote, “I miss being able to sit with a professor and have a conversation” to which several other participants in the same café group wrote “ditto” on the worksheet next to this participant’s comment. Other groups perceived that videoconferencing caused faculty to “dismiss” the Regina learners. During the large group wrap-up session for relatedness, the Regina participants stated that having a greater face-to-face component in Regina would support a greater feeling of connectedness, which would ultimately support their learning.

Impact of Relatedness

In this section, I present participants’ accounts of the impact that experiencing relatedness with teachers had on the participants as individuals and as learners. One café group provided a summary of the impact of relatedness on motivation, which demonstrated the interplay between relatedness, autonomy, and competence:

The IMPACTS of positive teacher/student relationships (considers the personal/human aspect of relating and the procedural/technical aspects of relating): [students are] more likely to seek help when help is needed; therefore, greater learning opportunities. Feeling cared for encourages you to learn how to care for others [patients] better. Student and teacher feel inspired to improve their roles. Motivation to learn becomes largely intrinsic, rather than due to external pressures or fears. When a preceptor/teacher takes a student “under their wing” the student feels believed in and has a safe space to learn in, [which] inspires and motivates the student to learn.

The students emphasized the importance of quality relationships as an enabler of learner motivation because it appeared to break down barriers with preceptors and foster a learning

environment that supported greater autonomy (e.g., intrinsic motivation to learn with no pressure or fear) and competence (e.g., help seeking behaviours).

Desire to Teach as a Consistent Theme Across all Basic Needs

In coding and analyzing the data within and across each of the three basic needs of self-determination theory, I discovered that participants consistently noted that a teacher's desire to teach was a key element in supporting autonomy, competence, and relatedness. In the café conversations and large group de-briefing sessions for *autonomy*, the participants explained that when teachers invested their time in teaching, showed passion for what they were teaching, and demonstrated the relevance of the topic, the participants then shared this passion and experienced a significant increase in motivation.

Similarly for the conversations related to *competence*, participants explained that a professor's desire to teach was essential for supporting their perceptions about personal competence. The participants believed that a desire to teach indicated that teachers would also take the time and exert greater effort to help students to learn an important concept, to master a skill, or to support students to make them feel that they were capable of achieving an outcome. One café group wrote, "For those who aren't there yet [have not yet mastered a skill], preceptors who care enough to see if I really can do the skills – [they] don't skip the awkward/difficult parts."

For the basic need of *relatedness*, participants experienced an immediate personal connection to professors who wanted to teach. One café group wrote, "You can tell which professors don't like to teach! [It] kills motivation." Participants experienced this connection with their teachers because they believed that the teacher cared about them, wanted them to be successful, and wanted to create a learning environment that would be a safe place for students to

learn. In this environment, students believed they were safe to ask questions or attempt a new procedure because they felt assured that they would not be judged; rather, they would be encouraged and supported throughout the learning process.

Summary of Chapter 4

In Chapter 4, I presented the results of three self-determination theory surveys and the findings from two Word Café events for medical student participants from the University of Saskatchewan. The purpose of the self-determination theory surveys was to determine the motivational perspectives of medical students from across all four years of the medical program. I used the GCOS to determine students' tendencies toward three identified causality orientations: autonomy, controlled, and impersonal. Of the participants who completed the survey, students reported a higher tendency toward autonomy orientation, females scored higher in autonomy orientation than males, and males tended to score toward more controlling orientations. I found no statistically significant differences for causality orientation across program year or across distributed sites.

I used the LCQ to determine the extent to which students perceived their instructors to be autonomy supportive. The participants reported that their instructors were moderately autonomy supportive, and the participants at the Saskatoon site found their instructors to be more autonomy supportive than the participants in the Regina site. I found no statistically significant differences for gender, year in the program, or number of years of university before entering medical school.

I used the SRQ-L to determine if an individual's reasons for engaging in learning were autonomous or controlled, based on a RAI. Participants' scores for autonomous engagement were higher than controlled, and females reported more autonomous reasons for engagement than males. I found no statistically significant differences in any other parameters.

I organized the World Café event activities and results based on the three basic needs of self-determination theory: autonomy, competence, and relatedness. The participants discussed hindering and supportive experiences of autonomy, competence, and relatedness in their medical education. The major themes from the conversations about autonomy included the participants' desire and appreciation for choice, relevant content and experiences, guidance and support, and teaching effectiveness. Within these themes, the participants shared positive and negative experiences, which emphasized the important motivational role these autonomy themes played in their educational experience. Clerkship experiences of autonomy were unique because the learning experience was different than in pre-clerkship. The clerkship themes included appropriate level of responsibilities, ability to pursue interests, and feeling forced, by the schedule, systemic issues, or preceptors.

The major themes from the café group conversations about supporting perceived competence in learners included: (a) a desire for effective feedback, (b) a need for a positive learning environment with guidance, (c) a request for practice and application, and (d) a request for better content management. The participants also reflected on the difference between confidence and competence and the reciprocal interaction between these two concepts in supporting learner perceived competence.

The major themes from the café group conversations about relatedness-support and how it supported learner self-determination included: (a) teachers who demonstrated interest in learners, academically and personally; (b) teachers who were caring and compassionate; (c) teachers who were enthusiastic; and (d) teachers who showed humanity and humility.

Participants in Regina shared similar experiences as the Saskatoon cohort; however, because of

the nature of the distributed program, and because most teachers were located at the Saskatoon site, the Regina students experienced hindered relatedness with their teachers.

CHAPTER 5: SUMMARY, DISCUSSION, AND IMPLICATIONS

The purpose of this study was to explore medical students' perspectives of self-determination in medical school, based on the three basic needs identified in self-determination theory: *autonomy, competence, and relatedness*. Aligned with this purpose, the broad question for this research was: What are medical students' perspectives of their self-determination during medical school? The specific research questions were:

1. What were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?
2. What were medical students' perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?
3. What were medical students' perspectives of relatedness with their teachers and what was the impact on their learning?

Self-determination is a personal construct; in other words, regardless of whether the stimulus to act is intrinsic or extrinsic, the individual determines the energy to be invested in engaging in an activity or behaviour (Ryan & Deci, 2000a). Therefore, individual perspectives (in this study, medical students' perspectives) on self-determination were important to gather in order to inform teaching practices and to influence learner self-determination. Exploring medical students' perspectives of self-determination in their medical education provided information for teachers and programs about approaches, methods, and activities that supported or hindered medical student self-determination. These insights can be used to support changes in the educational program to enhance self-determination and reduce teacher activities that hinder self-determination. To date, little research has explored or applied self-determination to the medical education context (ten Cate, Kusurkar & Williams, 2011).

My methodological framework for this study was guided by principles of participatory action research (Cornwall & Jewkes, 1995; Costa, Herbert & Macaulay, 2004; Macaulay, 2007). In order to explore my research questions, I used a mixed methods design organized into two major phases. Phase I had a quantitative focus and used three previously validated surveys to determine medical students' baseline motivational orientations; their perceptions of teacher autonomy supportiveness; and, their perceptions for why they engage in learning based on self-determination theory principles. These surveys helped to address my first research question regarding medical students' perspectives of autonomy support. These surveys also provided supportive contextual information for the data collected in Phase II of this research study. All medical students in the College of Medicine at the University of Saskatchewan were invited to participate in Phase I of this study.

Phase II had a qualitative focus and used a World Café conversational method to gather medical students' perspectives of autonomy, competence and relatedness supportiveness in the undergraduate medical education program. Student participants also discussed the impact that these elements had on their self-determination. Purposive sampling was used to recruit up to 100 participants distributed throughout all four years of the medical program. Phase II of my study was designed to address all three central research questions. Because the College of Medicine is a distributed medical education program, I explored if the students' experiences of self-determination in the Saskatoon and Regina were unique. Therefore, I held World Café events in Saskatoon and Regina for the students at each respective site.

The World Café conversational method involved gathering people together to discuss topics that matter (Brown & Isaacs, 2005). Starting in groups of 4-5 people, I asked café participants to discuss topics related to the three basic needs of self-determination theory:

autonomy, competence, and relatedness. After 15 minutes of conversation, I asked café participants to randomly rearrange their groups to support cross-pollination of ideas. The participants recorded all of their ideas and conversations on large sheets of paper at their tables.

I transcribed and imported all data from the World Café into NVivo software. Using deductive content analysis, I identified related comments, ideas, and concepts. I placed similar comments and concepts into codes. I placed similar codes into broader categories, which emerged as the central themes of the study.

Discussion of Findings

In this section, I present the findings of this study as they related to each of the two phases of the study. Again, Phase I of the study was quantitative and entailed inviting students to complete three self-determination theory surveys. Phase II of the study was a qualitative exploration of medical students' perspectives of self-determination in medical school, based on the three basic needs of self-determination theory: *autonomy, competence, and relatedness*. The findings of Phases I and II addressed the three main research questions of this study.

Discussion of Findings from Phase I

Phase I of this study addressed the first research question: What were medical students' perspectives of autonomy support in their medical education program? Data to address this question came from three validated self-determination theory surveys: the General Causality Orientations Scale (GCOS), the Learning Climate Questionnaire (LCQ), and the Learning Self-Regulation Questionnaire (SRQ-L). I also used the data from the surveys to triangulate with the qualitative data from Phase II of this study. The results from all three self-determination theory surveys were consistent with findings from previous studies that used these surveys. I explore these findings in more detail with the discussion of Phases I and II.

Findings from the GCOS Survey

The results of the GCOS survey showed that the medical students involved in this study had a greater autonomy orientation than controlled or impersonal orientation. A higher score for autonomy orientation indicated a higher degree of self-determination in the individuals answering the survey (Deci & Ryan, 1985b).

The experience of choice is essential in an autonomy orientation, which indicated that these medical students' tended to view regulatory events as informational rather than controlling. In other words, they tended to use all information available to make choices and self-regulate based on personal goals, rather than experiencing regulatory events as externally regulated controls or pressure to perform without a sense of choice (Deci & Ryan, 1985a). In the controlled context, individuals' behaviours are dictated by guilt, a sense of obligation, or extrinsic rewards (Deci & Ryan, 1985a, 1985b). In the impersonal orientation, individuals feel that they are unable to regulate their behaviour; that it is beyond their control (Deci & Ryan, 1985a).

Deci and Ryan (1985b) explained that individuals are oriented, to varying degrees, to each of the three causality orientations and that it may not be appropriate to classify someone as a specific "type." They also explained that different people might respond to the same regulatory event in different ways, which reinforces the notion that the degree of self-determination is strongly dependent on this causality personality trait. This concept is important because the findings of the GCOS survey indicated that these medical students also displayed controlling and even impersonal orientations, although to lesser degrees than the autonomy orientation.

A second finding from the GCOS survey showed that although males generally rated themselves as autonomy oriented, they had higher controlled orientation scores than did females,

and that females had higher autonomy scores than the male participants. This finding was consistent with the findings from other studies that used the GCOS and other measures of autonomous motivation (Deci & Ryan, 1985b; Kusurkar, Croiset, & Ten Cate, 2013). The consistency in the GCOS scores from prior research served as a confirmatory validation of the GCOS in my study. These gender differences in GCOS scores could not specifically inform the results of Phase II of my study because I was not able to document the sex of the individuals as they made their comments during the World Café event. If I were able to record gender, it might have been interesting to determine if males tended to make comments that represented a more controlled orientation than females.

For the GCOS survey, I compared the scores of students from across years in the medical program, and the GCOS scores of participants based on the number years of university that each student had enrolled in before medical school. The purpose of comparing the year in the medical program was to determine if medical students' causality orientations changed as they progressed through the program. The latter measure (i.e., years of university before medical school) served as a proxy for age. I did not ask participants to provide their age in order to preserve their anonymity. The purpose was to determine if age had an impact on causality orientation. Neither comparison yielded statistically significant differences. I found no evidence to support these hypotheses, which was likely because causality orientations have been described as durable individual traits (Ryan & Deci, 2002).

Findings from the LCQ

The purpose of the LCQ was to determine medical students' perspectives of instructor autonomy supportiveness. Examples of autonomy supportive actions by teachers included: (a) listening to students, (b) acknowledging and accommodating interests, and (c) supporting learner

preferences, needs, and personal goals (Jang, Reeve & Deci, 2010). Higher scores on the LCQ, based on a 7-point Likert scale, indicated higher perceived autonomy-supportiveness. The results of this survey showed that medical students were neutral in their perspectives about the level of autonomy-supportiveness of their teachers ($M = 4.46$). Williams, Saizow, Ross, and Deci (1997) investigated medical students' perspectives of autonomy support using the LCQ and reported similar scores.

I asked the medical students in my study to consider the autonomy supportiveness of their teachers globally; thus, they considered in their ratings experiences with teachers who were both autonomy-supportive and controlling in their approach to regulating learner behaviours. This global rating of teachers may suggest why the results were neutral. More importantly, these findings emphasized that there were teachers who used controlling methods to regulate learner behaviours, which had the effect of lowering learner perspectives of autonomy-supportiveness.

Another finding from the LCQ was that the medical students in the Regina cohort reported lower average scores than the Saskatoon respondents (Regina, $M = 4.15$; Saskatoon, $M = 4.54$; $p < .01$). Regina students had the same teachers for their large group classroom sessions as the Saskatoon students; yet, they perceived the autonomy supportiveness of their teachers to be lower. Regina students experienced these sessions via videoconference technology, and the Saskatoon students were face-to-face with the same teacher. The Regina students may have experienced disconnectedness with their teachers, which may have led to the perception of faculty being less autonomy supportive. This hypothesis was consistent with the findings from the World Café, which I address.

Findings from the SRQ-L

The purpose of the SRQ-L was to determine if a learner's reasons for engaging in learning were autonomous or controlled. Participants responded to various scenarios that addressed either autonomous or controlled examples of learner engagement. Higher scores on the autonomy subscale indicated autonomous reasons for engaging in learning, and higher scores on the controlled subscale indicated controlled reasons for engaging in learning. The score from the controlled subscale can be subtracted from autonomy subscale to produce a Relative Autonomy Index (RAI), where higher scores in the RAI indicate autonomous reasons for engaging.

The results indicated that medical students, generally, had autonomous reasons for engaging in learning. Williams and Deci (1996) used the SRQ-L to measure medical students' self-regulation; however, in their study, they did not present raw scores, so I was not able to directly compare my results. However, their results indicated that medical students had more autonomous reasons for engaging in class. No further studies have investigated medical students self-regulation using the SRQ-L.

Williams and Deci (1996) noted that females tended to have more autonomous self-regulation for learning than males. The findings from my research were consistent. Williams and Deci explained that higher autonomous self-regulation in females was attributed in large part to greater autonomy orientation in females than males, as confirmed through the GCOS survey. Therefore, if individuals had a greater autonomy causality orientation they were more likely to engage in class for autonomous reasons, because the content being taught was consistent with their personal goals, supported their desire to learn more or develop their skills in an area, and supported their desire to be challenged.

Higher RAI scores in learners are significant because they predict positive learning outcomes such as greater conceptual learning, enjoyment of school, and coping with failure (Williams & Deci, 1996). Students that are more autonomous experienced greater internalization, demonstrated behaviours consistent with the internalized stimulus, and experienced greater perceived competence related to externally regulated behaviours.

An isolated finding for this study was that first year medical students scored higher on overall relative autonomy than did the third year medical students. No other differences were found when comparing other years. Moreover, no differences existed between first and third year students for GCOS, which has been shown to be predictive of relative autonomy (Williams & Deci, 1996). I observed a trend for the mean RAI scores to decrease from first to second year, and then again from second year to third year. The RAI score for the fourth year medical students increased slightly compared to third year students. The RAI score for fourth year students was less than first and second year student scores.

This difference in RAI scores may be an idiosyncratic finding; however, it may be explained by the learning context. Parallels may be drawn from the findings of Neumann et al. (2011), who performed a systematic review of the literature investigating reasons for the decline in empathy in medical students. Although empathy has never been linked to relative autonomy, some of the factors that affected empathy during a medical student's academic career were similar to those that affected relative autonomy. Neumann et al. (p. 998) described distress as the main cause of loss of empathy. Examples of underlying causes of distress included: (a) mistreatment by superiors through harassment, humiliation, and discrimination; (b) innate learner vulnerability due to idealism and enthusiasm, which diminish due to the challenging realities faced in clinical practice; (c) lack of support systems; and (d) heavy workload with lack of sleep

and personal time. Many of these underlying causes of distress have also been described in the self-determination theory literature as being autonomy hindering (Reeve, 2002). Further research is required to explore a relationship between self-determination and empathy, although findings from Phase II of my study indicated a connection between student experiences of autonomy-, competence- and relatedness-hindrance and the underlying causes of distress leading to decreased empathy. I explore this relationship in more detail below.

Discussion of Findings from Phase II

Phase II of this study addressed all three of my research questions. The organization and design of Phase II of the study was based on the three research questions derived from the three basic psychological needs of self-determination theory: *autonomy, competence, and relatedness*. Therefore, I focus the discussion on each of the three basic psychological needs and present the themes that emerged from the information gathered from the World Café conversations of Phase II. I discuss each psychological need separately and sequentially, however, given the interdependent and mutually supportive nature of the three needs (Ryan & Deci, 2002), each section incorporates and develops the self-determination theory concepts discussed in earlier sections.

Discussion of World Café Autonomy Themes

The first World Café conversation focused on the basic psychological need of autonomy and addressed my first research question: What are medical students' perceptions of autonomy support in their medical education program, and what is the impact on them as learners? I provided a brief definition of autonomy as described in the self-determination theory literature to guide the students. I decided to provide a definition because I wanted the students to have a common understanding of autonomy during their discussions that was consistent with self-

determination theory. In this research, my interest was not to see how medical students defined or interpreted autonomy, but rather to invite the students to reflect on, and discuss their perspectives of autonomy based on their experiences during medical school. In order to do this, the participants needed a reasonably common understanding upon which to base their conversations.

I asked the participants to reflect on and discuss their experiences in their medical education where they felt that their autonomy was either supported or hindered and how these experiences affected them as learners. I organize the themes for autonomy into two major sections. In the first section, I explore the themes specific to the pre-clerkship participant experiences. In the second section, I discuss the themes specific to the clerkship students. Although some themes were similar between these two groups of students, (e.g., the concept of choice), the contexts that defined the experiences related to choice were different.

Pre-clerkship Theme 1: Choice

The study participants believed that choice was an essential element for supporting autonomy. Choice was not only one of the most often cited words in the autonomy analysis, but participants also emphasized choice as the cornerstone of autonomy-supportiveness. The participants described the importance of being able to choose how to use their time, being able to choose what and how to learn; and, being able to choose the activities in which they engaged. Further, a key element to the experience of choice involved the participants' belief and observation that the program and teachers supported choice.

Amoura, Berjot, and Gillet (2013, p. 64) found that "students who were motivated to control events in their life were more likely to present autonomous motivation toward their studies." The qualitative and quantitative findings in my research are consistent with the findings

of Amoura, et al. The medical students in my study scored higher on the relative autonomy index, which indicated that they had autonomous reasons for engaging in their learning. The students also expressed a desire to have some degree of control in their day-to-day educational experiences. Amoura, et al., (p.64) explained that the relationship between autonomous motivation and desire to control was mediated by the need for competence (i.e., a student's need to feel confident in his or her ability was the main factor that facilitated the relationship between the desire for control and autonomous motivation).

Choice and well-being. Experiencing choice was important to the students not only as a source of intrinsic motivation, or self-determination, but also as a source of personal well-being. When the participants experienced opportunities for choice, they described decreased levels of stress, increased feelings of control, and greater meaning in their lives. When the participants experienced loss of choice, they felt frustrated and resentful. They described experiencing physical symptoms of anxiety and a loss of creativity when choice was hindered.

Self-determination theory posits that when the three basic psychological needs are fulfilled, individuals experience self-determination and greater personal well-being (Ryan & Deci, 2000b). When these needs are not fulfilled, either individually or together, individuals experience poor well-being leading to anxiety, low self-esteem, and poor general health (Ryan & Deci, 2002). The participant descriptions of increased stress and anxiety in this study were, therefore, consistent with the findings in the literature. Providing an environment where medical students experience opportunities for choice in their learning not only supported greater perceived autonomy and self-determination, but also supported well-being.

Choice and causality orientation. An important factor that influences one's experience of choice is one's perceived causality orientation. Ryan and Deci (1985b) posited that

individuals were oriented in varying degrees to interpret stimulus events as informational, controlling, or impersonal. Individuals who interpreted events as informational experienced regulated events differently than individuals with controlled or impersonal personalities. For example, people with informational orientations: (a) perceived a greater sense of choice related to the experienced event; (b) perceived a stimulus event as providing essential information to allow them to make choices; (c) tended to view events as informational because they had a greater awareness of their interests, goals, and feelings; and (d) typically had an *internal* perceived locus of causality (Deci & Ryan, 1985a; Williams & Deci, 1996).

Deci and Ryan (1985a) explained that individuals who interpreted events as controlling perceived greater external control and less choice related to the experienced event. These individuals perceived stimulus events as pressure to perform, rather than choice. They often behaved based on *should*, *have to*, or *must* conceptualizations (Deci & Ryan, 1985a, p.157). External forces were perceived to be the source of regulation (i.e., extrinsically motivated) rather than from within the individual. Controlled individuals typically had an *external* perceived locus of causality.

Deci and Ryan (1985a) explained that individuals who interpreted events as impersonal perceived that they were incompetent to deal with the event. These individuals felt that outcomes from behaviours were not controllable (i.e., due to chance or fate) and for this reason, these individuals lacked any motivation and often felt helpless.

Consideration of these causality orientations in the context of this research is important, particularly related to the World Café conversation data. Based on the GCOS data, the medical student participants of this study tended toward autonomy causality orientations over either controlled or impersonal orientations. The GCOS results were consistent with the medical

students' appreciation and desire for choice within the medical program based on the World Café conversations. Below, I discuss the elements that the medical students described as being autonomy-supportive.

Independent learning. At the World Café, the students expressed appreciation that they had time available in the curriculum for independent learning where they could choose how to approach and focus their learning and pursue interests. Beyond the availability of independent learning time, the students also listed a number of elements that they believed not only supported choice in their learning, but also supported effective use of independent learning time. The students appreciated having clear objectives, a pass/fail assessment policy, and teaching strategies like flipped lectures and recorded lectures because these pedagogical elements supported choice for how they could use their time to learn and appropriately pace their learning. I expand on each of these elements below, but first I discuss contrasting concerns related to independent learning.

Many of the participants perceived that the amount of independent learning time available was inadequate to support making meaningful choices about their learning. Participants believed that the large volume of content in the curriculum forced them to learn superficially without having the option for deeper learning even if they were interested, because of inadequate time for deeper exploration. The students perceived pressure, or a controlling aspect, in how they managed their time, which in turn shifted their locus of causality away from an internal locus and more toward an external locus, which negatively affected self-determination (Ryan & Deci, 2002).

Many of the participants in the World Café expressed their desire for more autonomy to choose how and what they learned, the pace at which they learned, and, at times, the depth at

which they learned. Many of these participants wanted greater independent learning time in the curriculum because they desired more independence in their learning. Other students wanted autonomy; however, they wanted some guidance and structure from their teachers so that their learning was not a completely independent process. These latter students wanted autonomy, but they did not necessarily want to be completely independent learners.

Autonomy versus independence. Ryan and Deci (2002, p. 8) differentiated between autonomy and independence. Autonomy referred to the degree to which an individual experienced choice or volition over their behaviours. Independence referred to acting without assistance or an external source. Autonomy is a more robust construct because it incorporates choice and independence is subsumed within autonomy. For example, an autonomous individual may choose to act independently in certain circumstances, or he or she may choose to be relatively dependent in other circumstances.

In my research, I found that some students chose to be more independent and preferred to learn on their own. Some clerks preferred to have more independence when interacting with patients. Alternatively, some individuals acted with complete dependence such that no autonomy was experienced. For example, some students desired to be spoon-fed material and to be told what to do and what to learn without any experience of choice. Some of these latter students noted that their desire to be spoon-fed arose from experiences where they perceived little choice, so they simply “shut down” and said, “tell me what to do.” In other situations, individuals felt *forced* to act independently. For example, some students felt that they were immersed in situations for which they did not feel comfortable, prepared, or competent to address. These situations led many students to experience little or no self-determination; however, equally concerning was the frustration, anxiety, and low self-esteem that these students

experienced as a result of feeling forced to engage in such activities. These experiences were consistent with previous research on low-autonomy learning environments (Ryan & Deci, 2000b)

The students in this study did not desire to be completely independent learners. Rather, they chose to be relatively *dependent* in their learning, and they sought a degree of guidance or structure from their teachers and from the curriculum. For example, some students expressed discomfort with self-directed learning. They believed that because they were in a professional college, with a specific set of knowledge, skills, and attitudes to attain, they required a degree of structure and guidance in their learning to support self-direction. The primary types of supports sought by students who expressed discomfort with self-directed learning included: (a) clear learning objectives, which provided a focus for learning; (b) provision of handouts and lecture recordings, which allowed students to prepare before a session and review effectively after a session; and, (c) provision of clear course expectations and learning resources to accomplish learning tasks.

Learner autonomy falls on a spectrum of relative independence or dependence. Students who chose relative dependence still felt autonomous, however they required guidance to support their learning. Jang, Reeve, and Deci (2010) explained that the concepts of teacher autonomy-supportiveness and structure and guidance for learners should not be considered antagonistic; rather, they should be considered as mutually supportive of learner self-determination. Supporting learner autonomy enhances an internal perceived locus of causality (i.e., that the individual is the source of volition and regulation). Structure enhances an individual's perceived competence (i.e., that she or he is capable of a task or achieving an outcome; Jang, Reeve, & Deci, 2010).

I explain how structure supports perceived competence in more depth under the theme *guidance and support*; however, I introduced the interaction of autonomy-support and structure in the context of choice and emphasized that the two concepts were mutually supportive. Autonomy-supportiveness and structure become antagonistic if the structure in place is used or perceived by learners to be controlling in nature (Jang, Reeve, & Deci, 2010). Mandatory attendance policies were one example of a controlling structure that appeared to negatively affect medical students. Not only did mandatory attendance negatively impact their perception of choice, but it also was a controlling form of policy structure.

Mandatory attendance and choice. Mandatory attendance policies impacted the amount of choice the medical students felt they had for their learning. Mandatory attendance also negatively influenced the choice students had for how they used their time (e.g., independent learning or extracurricular activities). Similar to the discussion of inadequate independent time, students believed that mandatory attendance policies created a controlling environment where students experienced pressure to comply. Participants noted in the World Café that their teachers often made them feel guilty about poor attendance in class. This introjected extrinsic regulation resulted in an external perceived locus of causality, which undermined their self-determination to learn and engage (Ryan & Deci, 2002). The situation was exacerbated, ironically, by fact that the students being shamed about attendance were the ones attending classes.

The negative impact that expectations of mandatory attendance had on medical student self-determination was likely a contributing factor to the neutral scores in the LCQ. The participant perceptions of neutral autonomy supportiveness from their teachers may have been influenced by their frustration with some of their teachers' demands for mandatory attendance

and their teachers' subsequent complaints when attendance was low, which was compounded by the fact that those teachers who were unhappy with attendance expressed their frustration to the students who were present.

The results of the SRQ-L indicated that these medical students, generally, attended class for autonomous reasons, because they understood the benefits for their learning, and understood attendance would help them to develop the requisite knowledge and skills for becoming a doctor. A conflict arose, however, when these medical students, who attended for autonomous reasons, perceived a controlling regulation or external pressure to attend from faculty who expressed frustration with students who did not attend. This conflict appeared to negatively affect the students' perceptions of choice, and ultimately negatively affect their self-determination.

Summary of Choice

The discussion of the importance of choice for medical students related more closely to cognitive evaluation theory, a sub-theory of self-determination theory, which focuses on actions and contexts that support or hinder an individual's intrinsic motivation. In cognitive evaluation theory, intrinsic motivation and self-determination are supported when the basic needs of autonomy and competence are supported and individuals find the activity inherently valuable and interesting (Deci & Ryan, 2002). Internal perceived locus of causality and perceived competence are the essential conceptual elements that reflect autonomy and competence, respectively. Thus, when medical students experienced choice (e.g., with independent learning) they perceived an internal locus of causality, which supported intrinsic motivation. When they experienced more controlling contexts (e.g., mandatory attendance) they perceived an external locus, which undermined their self-determination.

One of my assumptions discussed in Chapter 1 was that medical students were more likely to be intrinsically motivated. Given that many students chose medicine for altruistic reasons, they could be considered highly motivated toward the goal of helping others. However, there may be aspects of their medical education on a day-to-day basis that they do not perceive as valuable, interesting, or relevant, and possibly perceived as conflicting with their goal of becoming a physician. In this context, external regulations may be necessary to motivate individuals.

Organismic integration theory posits that if the source of the external regulation is consistent with one's values and interests, then one internalizes the external regulation, which produces an autonomous (i.e., more self-determined) form extrinsic motivation (Ryan & Deci, 2002). The extent of internalization influences the extent of autonomous extrinsic motivation. Little or no internalization produces an externally regulated form of extrinsic motivation with low self-determination. Moderate to high internalization produces an internally regulated form of intrinsic motivation, which is similar to intrinsic motivation, and more self-determined (Deci & Ryan, 2000). I discuss how both cognitive evaluation theory and organismic integration theory apply to the next theme, *relevance*.

Pre-clerkship Theme 2: Relevance

In the World Café, students discussed the importance of relevance in supporting autonomy and motivation to learn. The participants described several experiences where the material taught in class was clinically relevant, or the clinical exposures during shadowing and clinical skills teaching were interesting, valuable, and consistent with their goals for becoming a physician. Because the students found these activities to be inherently interesting and consistent with their self-actualization toward becoming a physician, they experienced an internally

perceived locus of causality and were intrinsically motivated (i.e., fully self-determined) to engage in these activities.

Such clinically oriented activities (e.g., cases, clinical topics during lectures, shadowing opportunities, or skills development) supported the students' developing perceived competence and were consistent with cognitive evaluation theory, in which an internal perceived locus of causality and perceived competence supported intrinsic motivation (Ryan & Deci, 2002).

Students were intrinsically motivated to engage in other learning experiences based on perceived relevance (e.g., lectures about clinical topics). However, a conflict arose regarding students' intrinsic motivation to engage based on perceived relevance and the evaluation and assessment-focused curriculum in which they were immersed. Deci, Spiegel, Ryan, Koestner and Kaufmann explained, "Events that pressure people toward specified outcomes, thereby denying them the experience of choice, have repeatedly been shown to undermine intrinsic motivation" (1982, p. 852). Moreover, as one café group noted, because students were recipients of a defined curriculum, they were not able to freely engage. In such a context, students cannot be fully intrinsically motivated as defined by cognitive evaluation theory.

The students' autonomous motivation can still be explained using organismic integration theory. Externally regulated events consistent with one's values and interests cause an individual to endorse or internalize that external regulation (Ryan & Deci, 2000a), because the individual integrates the event with his or her sense of self. An initial external regulation that becomes internalized produces an internally regulated form of extrinsic motivation, which is autonomous (i.e., self-determined) and similar in quality to true intrinsic motivation (Ryan & Deci, 2002). An important element in this internalization process is an individual's perceived relevance of the regulated event. The greater the perceived relevance of the event the more likely an individual

will internalize the regulated event. In education, greater internalization of learning events results in greater learning outcomes (Black & Deci, 2000).

In this study, relevance was a key determinant for the student participants in their integration and internalization process. The participants described a number of experiences that demonstrated relevance and supported integrated regulation including: (a) teachers who provided clinical examples in their lectures; (b) teachers who helped students to realize that what they were learning impacted patients; and, (c) contexts where students learned in the clinical environment, either in the formal curriculum or through self-directed clinical shadowing. Such examples helped the students to more fully understand why they needed to know the information being taught. These experiences also reminded students of their personal goals for medicine, which supported integration during externally regulated activities.

Students also discussed the negative impact that teachers had on their motivation when teachers did not provide relevant content or context in their lectures. Students believed that they were forced to learn material because “it would be on the test”, because they were told they had to, rather than learning the material out interest, or because it aligned with personal or curricular goals.

A common example of an activity with low perceived relevance provided by students was the use of mandatory written reflections. The students were significantly dissatisfied with mandatory reflections. They believed that written reflections after shadowing experiences were forced and artificial and they did not see the relevance of the activity. The students noted that the act of reflection was important. However, the students believed that mandatory written reflections were not helpful and were inconsistent with self-determination, because of: (a) inadequate guidance for how to focus the reflection; (b) insufficient feedback, and any feedback

provided was related to structural elements of the reflection rather than the feelings expressed; and, (c) inflexibility of the methods for reflective expression (e.g., drawing, poetry, story-telling, or group reflections).

Extrinsic motivation regulates student behaviour for desired teacher outcomes in the short term. However, in the long-term, these controlled regulations do not support learner persistence; moreover, they contribute to poorer outcomes for students, both academically and personally (Ryan & Deci, 2000a, 2000b).

Pressured regulatory events with little perceived relevance such as mandatory attendance, mandatory reflections, or mandatory lectures without clear objectives and goals led to extrinsic motivation with little or no internalization. The students likely engaged in these activities in order to gain reward (i.e., obtain a good grade) or to avoid punishment (i.e., failure in the course). Alternatively, the students may have partially internalized the external regulation and engaged; however, because the regulated behaviour was not integrated into or consistent with their personal values they may have engaged to avoid the guilt associated with not studying, not knowing everything, or letting a teacher down. Acting out of guilt or obligation is referred to as introjected regulation, which is linked to the students' self-worth and self-esteem, and results in poorer learning outcomes. Examples of poor outcomes include: (a) decreased conceptual understanding, (b) lower perceived competence, (c) poorer academic performance, (d) decreased enjoyment of courses compared to students with an internal perceived locus of causality; and (e) poorer coping mechanisms, and higher stress, anxiety, and depression (Ryan & Deci, 2000b; Deci & Ryan, 2000). More autonomous forms of extrinsic motivation (i.e., those where students recognize the relevance) facilitate student endorsement and internal regulation of the stimulus

event, and result in better learning, more effective coping mechanisms, and greater personal well-being (Ryan & Deci, 2000b).

Pre-clerkship Theme 3: Guidance and Support

In the first theme related to *choice*, the students emphasized the importance of independent learning as a significant element supportive of learner choice and therefore learner autonomy. The students expressed a range of perspectives related to how independent learning could be structured to support learning. Many students indicated that they desired some structure in their learning, and specifically their independent learning.

Similarly, some students experienced conflict regarding self-directed learning, because they perceived a need for guidance and structure in their learning. Examples of structure included: (a) having clear course and class objectives; (b) providing reliable resources to enable self-directed learning; (c) providing clear expectations of roles for learner and teacher; and (d) providing regular and timely practice and feedback. As discussed, these students were autonomous in their decision to be more dependent in their learning by requesting a degree of structure in their learning.

Structure is an important element in the learning environment. Jang, Reeve, and Deci (2010) explained that provision of structure was not antagonistic with autonomy-supportiveness. In fact, the authors argued that both structure and autonomy-supportiveness were necessary elements for learner self-determination. First, I explain the construct of structure and its relation to autonomy, and then I discuss the relevance to my study.

Jang, Reeve, and Deci (2010) defined *structure* as “the amount and clarity of information that teachers provide to students about expectations and ways of effectively achieving desired outcomes” (p. 589). Examples of structure included: (a) providing clear, detailed instructions

and expectations; (b) providing an ongoing action plan to support learners as they progress toward their goals; and (c) providing constructive feedback to support a sense of competence. Providing these elements of structure was found to change students' perceptions about the degree to which they controlled their outcomes, which enhanced their perceived competence as learners, a key basic need in self-determination. Thus, structure provided clarity of expectations without taking away students' perceptions of control or autonomy. The medical students in the current study expressed this same desire for structure, which was consistent with the self-determination literature.

Therefore, structure and autonomy-supportiveness target two distinct elements of one's self-determination, one's perceived competence and one's autonomy, respectively. However, Jang, Reeve, and Deci (2010) noted that providing structure was only effective when used in autonomy-supportive ways. Teachers who used structure to control students generated an external perceived locus of causality, which hindered autonomy.

The relevance of this relationship between autonomy and structure for my study related to some instances when students perceived inadequate structure. Even in learning contexts with high autonomy (e.g., self-directed learning) these students experienced low perceived competence because they received little direction and few expectations, no action plan that supported direction toward an outcome, and no feedback to assess their progress. In this context of high autonomy (i.e., high perceived internal locus of causality) but low structure (i.e., low perceived competence) students' experienced hindered self-determination.

In contrast, students discussed times when too much structure existed (i.e., mandatory attendance policies). These regulatory events were not autonomy-supportive and did not

contribute directly to the students' goals. Thus, the students perceived low autonomy-supportiveness and hindered self-determination, because the controlling structure is in place.

Students were not in complete agreement regarding the perspectives of support and guidance. Some students had a desire for more support and guidance, which was reflected in comments about requests for dependable, readily available resources; more teacher guidance; and concerns about not being left alone in clinical settings. Other students desired less structure and guidance, reflected in comments about wanting more independence in both the clinical and classroom learning environments. Authors of self-directed learning have acknowledged the notion that individuals are not necessarily self-directed because they are adult learners (Merriam, 2001). Individuals are more or less self-directed based on their comfort with the activity, which relates to the basic psychological need of perceived competence, where individuals are more intrinsically motivated if they perceive that the activity in which they are engaged contributes to their developing sense of competence (Deci & Ryan, 1985a). Effective autonomy-supportive structure is an essential component that facilitates an individual's developing competence and self-determination (Jang, Reeve & Deci, 2010).

Pre-clerkship Theme 4: Autonomy-Supportive Teachers

Teacher autonomy-supportiveness is a critical element to developing autonomy within learners. Autonomy-supportiveness requires the development of interpersonal skills and teaching styles in the teacher (Reeve, 2002). Interpersonal skills include the ability to (a) acknowledge learners' perspectives and feelings and provide emotional support; (b) focus on providing relevance for all content being taught and teaching approaches being employed, particularly those that are less interesting or relevant; (c) recognize learner interests and find

opportunities for learners to explore their interests (Reeve, 2002; Kusurkar, Croiset, & ten Cate, 2011).

Interpersonal teaching styles include a willingness of the teacher to: (a) engage in a relationship with students; (b) actively listen to and identify students' learning needs; (c) encourage and support initiative-taking and active participation by providing choice, giving appropriate guidance and structure, getting students to take responsibility for their learning, and providing optimal challenges; (d) use non-controlling, informational language, and provide constructive feedback to build perceived competence (Reeve, 2002; Kusurkar, Croiset, & Ten Cate, 2011).

Autonomy-supportive teaching has both academic and non-academic benefits. Academically, students engage better in the classroom, have higher academic achievement and perceived competence, better conceptual understanding and creativity, and greater flexibility in their thinking (Reeve, 2002, Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013). Non-academically, students are more emotionally positive, have higher self-worth and self-esteem, and have greater resilience to poor outcomes.

The results of the current study were consistent with the self-determination theory literature on autonomy-supportiveness. Students expressed frustration with passive-style didactic lectures, particularly in the context of expectations of mandatory attendance. Many students were disappointed with faculty who did not appear to take interest in them or try to understand their level of knowledge in the curriculum. Many students believed that feedback was inadequate in the classroom activities, in clinical contexts, and after examinations.

Students expressed an appreciation for activities that supported autonomy. Flipped lectures allowed students to learn at their own pace, involved active learning in class, and

focused on application of content, which supported students' perception of relevance. Students appreciated any large group session that involved active learning with clinical problems that challenged them to think. Students appreciated teachers who invested time in supporting learners. Students appreciated teachers who placed significant effort into organizing effective presentations, because they believed these teachers invested time in learners. Students thought that teachers who put in additional time beyond assigned hours invested in learners.

I used the LCQ data to determine if a difference in student perceptions of autonomy-support existed across sites in the education program. The results revealed that the Regina site cohort perceived less autonomy-supportiveness than their Saskatoon site counterparts did. The results from the World Café were consistent with the LCQ results. The Regina students perceived that the biggest obstacle to experiencing an autonomy-supportive environment was the inability to effectively interact with their teachers who were video conferenced from the Saskatoon site. These students experienced disconnection and isolation. They were frustrated that they could not ask questions of the teacher face-to-face outside of class time. In this learning context, the Regina students found it difficult to experience acknowledgement of their perspectives and feelings, and to engage in meaningful relationships with their teachers, which the students expressed were important elements for autonomy-supportive teaching practices (Reeve, 2002; Kusurkar, Croiset, & Ten Cate, 2011).

In this study, I did not attempt to compare the impact of autonomy-supportiveness on quantifiable academic indicators (i.e., academic success, conceptual understanding, or perceived competence), thus I am not able to discuss these elements. However, the qualitative information from the World Café sessions addressed the impact of autonomy-supportiveness on non-academic indicators. The students believed that when their teachers were not autonomy-

supportive, they experienced greater disengagement in class and in learning. In more controlled learning environments, students perceived that attending in-class sessions were a “waste of time” and that they could have learned the content better on their own. Further, lack of autonomy-support led some students to feel “stressed out” and anxious. This stress may have occurred because the students were pressured to attend, yet when they did attend class they did not see the relevance, or perhaps the lectures did not meet their needs as learners, which hindered their perception of personal volition and self-determination.

I used the LCQ to investigate learner perception of teacher autonomy supportiveness. The results revealed that student ratings of autonomy support approached neutral. When triangulated with qualitative information from the World Café, where students provided examples of both autonomy-supportive and controlling experiences, the findings revealed that the range of student experiences were many, but also inconsistent from one class or one teacher to another. Some students noted difficulty in assessing autonomy supportiveness of their teachers on one scale because their experiences were so variable from one teacher to the next. A range of positive and negative autonomy experiences typically leads to a regression toward selecting neutral ratings. The findings from the World Café provided the context for the neutral ratings.

The students in this study expressed that they would benefit from greater consistency of autonomy-supportiveness from their teachers. It is possible that when students were exposed to autonomy-supportive teachers and controlling teachers, these conflicting experiences were a source of distress. Those students with higher autonomy orientation would likely perceive controlling events as more informational (Deci & Ryan, 2002). However, conflicting teacher styles may have led even autonomy-oriented students to experience an external perceived locus

of causality, which would impact self-determination. Much of the self-determination theory research focuses on situations of either high autonomy support or low autonomy support without conflicting experiences. Research related to conflicting autonomy-controlling environments would help to develop a better understanding of the impact of this conflicting learning environment on students' perceptions of autonomy-supportiveness. Qualitative data from the current study revealed that controlling events left a greater impression on students, as indicated by the greater focus on the impact of low autonomy support on their learning experiences, despite being asked to comment on and discuss positive and negative experiences.

Summary of Pre-Clerkship Themes

The discussion of the autonomy themes for the pre-clerkship students indicated that the students identified choice as the major theme that supported their autonomy. Relevance was an important element to support students in making an informed choice. When students recognized the relevance of a topic, they internalized the external regulation into their personal values and goals and chose to engage in learning. Although the students prioritized autonomy-supportive teaching methods as essential for self-determination, they still desired a degree of structure, guidance, and support in their learning experience. This desire for structure in the context of autonomy-supportiveness was consistent with the self-determination theory literature, which explained that self-determined, intrinsic motivation is supported when individuals experience an internal perceived locus of causality (i.e., autonomy-support) and perceived competence (i.e., through provision of structure).

In the next section, I discuss the specific autonomy-related themes for clerkship students. Because the context of learning was different for clerkship students, the themes that they discussed had a different focus. The three themes were responsibility, pursuing interests, and feeling forced.

These themes related primarily to the construct of choice, which was critical to individual autonomy and self-determination.

Clerkship Theme 1: Responsibility

One of the most significant elements in support of clerkship learner autonomy occurred when clerks were given opportunities to take responsibility for clinical management of patients. The clerks were keen to apply their knowledge and skills in real contexts and to be active participants in the clinical care team. This responsibility for patient care was a significant source of intrinsic motivation for the clerks, which can be explained using cognitive evaluation theory (Ryan & Deci, 2002). The clerkship students had entered into the phase of their training that was most consistent with their ultimate goal of being a physician. Therefore, they experienced a high internal perceived locus of causality for engagement in clinical care, which in turn supported self-determination. Ryan and Deci (2002) explained that activities that supported an internal perceived locus of causality and progression toward perceived competence supported self-determination.

Many clerks also perceived that their preceptors were autonomy-supportive because they took interest in the clerks, valued their opinions, tried to align the rotation with the clerks' interests, and made the clerk feel part of the team. Because of this preceptor autonomy-supportiveness, the clerks were more self-determined in their willingness to take on responsibility. The clerks who experienced little autonomy-supportiveness explained that engaging in the learning became more challenging, and they often submitted to a more controlling form of regulation as indicated by terms like "shut down" and "give up" and "just tell me what to do."

Although the clerks wanted responsibility, they did not want to be completely independent in their practice; rather, they wanted to be supported and guided through their experiences. Part of their desire for structure arose because they did not want to negatively impact patient safety. However, from a learning perspective, these clerks wanted the opportunity to build their competence, but in a structured learning environment. Like the pre-clerkship students, the structure the clerks sought related to clear expectations about their roles and contributions to the team. Most importantly, their desire for structure related to receiving adequate monitoring and constructive feedback to support their developing competence and confidence (i.e., *perceived competence*) in their ability to manage patient problems.

The second hindrance to intrinsic motivation for some of the clerks related more to insufficient curricular and schedule structure. Clerkship consists of a series of rotations, typically six weeks long, and clerks switch wards, preceptors, and sometimes hospitals with each new rotation. Furthermore, within each rotation, clerks commonly work with several different preceptors. Many of the clerks believed that because they frequently switched preceptors, the preceptors recalibrated their expectations, which often resulted in a clerk receiving fewer responsibilities. The clerks also perceived that frequent switching of preceptors affected the consistency and quality of feedback that they received. Because they were switching preceptors frequently, they experienced difficulty in establishing rapport with preceptors and they perceived that their preceptors likely found it difficult to provide effective feedback. The consequences of a constantly changing learning environment appeared to negatively affect the clerks' perceived competence and negatively impacted self-determination, which was consistent with the self-determination literature (Jang, Reeve, & Deci, 2010).

Clerkship Theme 2: Pursuing Interests

In the clerkship theme *responsibility*, I discussed the positive impact that preceptors had on clerks' perceived locus of causality when they listened to clerks and tailored their rotation to suit their interests and goals. Theme two expanded on the importance that learners placed on being able to pursue interests, and the positive impact pursuing interests had on self-determination. Beyond pursuing interests within a rotation, clerks also noted that arranging elective time played a significant role in supporting autonomy and self-determination. Elective blocks provided clerks with the freedom to choose what clinical specialties they wanted to engage in based on interest, pursuit of goals, or desire to build competence in an area of medicine in which they felt they needed more skill development.

Whether the pursuit of interests occurred during core rotations while working with a faculty member who tailored the experience to the learners' interests or during elective time, the clerks were provided opportunities for choice, which supported an internal locus of causality and their self-determination. Moreover, because the clerks engaged in electives or were able to tailor their experiences during core rotations to build their skillset in a particular area of medicine, they experienced greater perceived competence, which is another key element to supporting self-determination (Ryan & Deci, 2002).

Unfortunately, these positive autonomy-supportive experiences were more the exception than the rule. Many clerks experienced a high degree of inflexibility from their preceptors during rotations. Moreover, many clerks were afraid or embarrassed to discuss their interests with their preceptor for fear of being negatively judged, either personally or through a poor evaluation. This issue was particularly relevant when the clerk was interested in a field of medicine different from that of their preceptor. Some clerks admitted that sometimes they

assumed their preceptors would judge them; however, the fear of potential judgment was equally powerful as an actual judgment in terms of inhibiting learners from expressing and pursuing their interests.

Much of these students' perceived fears were influenced by the "hidden curriculum" defined as:

A set of influences that function at the level of organizational structure and culture... that take place outside formally identified learning environments: in the elevator, the corridor, the lounge, the cafeteria, or the on-call room...[and] draws our attention to...the commonly held "understandings", customs, rituals, and taken-for-granted aspects of what goes on in the life-space we call medical education. (Hafferty, 1998, p. 404)

Outside of formal educational environments, teacher knowledge, attitudes, and beliefs that are not part of the formal written curriculum can be exposed, which can have an effect opposite and detrimental to written curriculum. Phillips and Clarke (2012) provided hidden curriculum examples of discrimination, cultural stereotyping, and disrespect for students, patients, and other medical specialties. Students faced with these situations often concealed the conflict out of fear of academic repercussions, negative perceptions of weakness, poor resilience, or because of hierarchical dynamics.

In the hidden curriculum, there are two challenges to face; the first is the hidden curriculum itself, and the second is the conflict that students face when exposed to the hidden curriculum. The latter challenge is relevant for learner self-determination. Conflicts experienced by students, related to a fear of judgment, were based on low autonomy-supportiveness of teachers, which affected perceived locus of causality. Autonomy-supportiveness involves valuing learners' interests and goals, encouraging initiative-taking, and acknowledging and

inquiring about learners' perspectives and feelings (Jang, Reeve, & Deci, 2010). Consistent with the literature, in this study students perceived that they needed to conceal their interests for fear of embarrassment, or a bad evaluation from preceptors. Whether the fear was real or perceived was immaterial, because in self-determined motivation individual perception of factors that either support or hinder motivation is essential. The hidden curriculum environment hindered autonomy by creating an external perceived locus of causality, which undermined self-determination.

Clerkship Theme 3: Feeling Forced

The hierarchical relationship between preceptor and student, whether perceived or real, caused many clerks to believe that they were unable voice their opinions or fully express themselves for fear of receiving negative evaluations, generating false perceptions of laziness, or being critically judged by authority. In turn, many clerks felt forced to engage in activities and learning contexts that they might otherwise have avoided, or in which they would have asked for more guidance or supervision.

Intrinsic motivation involves freely engaging in an activity because it is inherently enjoyable and satisfies the basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2000a). The controlling context that some clerks experienced by feeling forced or by not being able to say no undermined their internal perceived locus of causality and autonomy. From an organismic integration theory perspective, the clerks' experiences of feeling forced to engage were examples of non-autonomous extrinsic motivation with an external perceived locus of causality. The clerks who experienced this form of controlled regulation performed the activity to satisfy the requirements of the preceptor to either obtain a good

evaluation or receive praise, and more likely to avoid the potential negative consequence of receiving a bad evaluation or negative judgment of character.

Ryan and Deci (2000a) noted that individuals may initially identify with (i.e., recognize the intrinsic value in) an activity, but if the person regulating the behaviour is too controlling in his or her approach the recipient of the regulation experiences external regulation, which is a lower quality of motivation. In the context of the current study, the clerks valued the opportunity to work in clinical contexts with preceptors to develop their skills. However, because their preceptors were controlling in their approach, the clerks experienced less self-determination.

The clerks also noted that the evaluation system created a pressured learning environment. Many clerks believed that the high frequency of evaluations did not contribute specific information to support learning. They felt the evaluations were too subjective and inconsistent across preceptors. The evaluations felt more like a personal judgment against them as opposed to a means for providing concrete assessment and feedback on their skills. As such, clerks who perceived judgment behaved in ways to ensure positive evaluations. For example, some accepted responsibilities for which they were not fully comfortable in order to avoid being labeled as lazy or incapable. Clerks also described avoiding asking questions to minimize risk of being evaluated poorly because of insufficient knowledge.

Such examples demonstrated externally regulated, extrinsic motivation. The clerks acted to attain reward or avoid punishment, rather than out of interest and pursuit of goals. Results from self-determination research have demonstrated that external regulation leads to decreased interest and effort, and a tendency for learners to blame others for poor outcomes (Ryan & Deci, 2000a). Given the growing concern over medical students' decline in empathy, further research

into a possible relationship between externally regulated extrinsic motivation and empathy might expose this important area of medical education.

Clerks experienced a similar phenomenon of external regulation related to their application to residency. In Canada, all clerks who plan to pursue post-graduate medical training (i.e., residency) must apply to the Canadian Residency Matching Service (CaRMS). CaRMS is the repository for all application information. Each clerk's application information is sent to every program to which they apply. CaRMS is also the organization responsible for mathematically "matching" applicants to programs, based on a ranking system. The CaRMS application and selection process is stressful for medical students because their future training depends on successfully matching. Many students noted that the CaRMS process became their focus such that they lost sight of the opportunity for learning during their clinical experiences. Like their evaluations, many clerks noted that they often felt forced to do things beyond their comfort zone, because they feared receiving a bad evaluation, which in turn could impact their CaRMS application.

Summary of the Autonomy Theme

In this section, I discussed medical students' perspectives of autonomy-supportive or controlling events in their medical education and the impact that these events had on their self-determination. Learner choice and their experiences with teachers or within the program that either supported or hindered choice had a significant impact on learner perceptions of their autonomy and self-determination. Medical students shared various experiences of autonomy supportiveness but also many experiences of relatively controlled regulation. For autonomy-supportive experiences, students perceived greater enjoyment, greater to desire to engage, and they believed that they learned better. For controlling environments, students described feeling

overwhelmed, stressed, and anxious. Students experienced a decreased desire to engage when exposed to controlling environments, and they believed that they did not learn from the experience. The students' described experiences are consistent with the self-determination theory literature for autonomy supportive and controlling environments (Reeve, 2002; Jang, Reeve, & Deci, 2010; Ryan & Deci, 2000a).

Medical students described two key supportive elements for their self-determination: (a) when teachers emphasized the relevance of the content being taught; and (b) when teachers provided clear structure and expectations in their courses. Conversely, the students noted that when these elements were absent, they hindered the self-determination. Providing relevance impacted student self-determination through the process of endorsement and internalization with existing personal values. When students recognized and endorsed the relevance of the learning experience and integrated it into their values, goals, or sense of self, they experienced greater self-determination. The process of integration produced an internal perceived locus of causality and autonomous motivation.

The students appreciated having structure and guidance. Structure helped them understand expectations; and guidance, in the form of monitoring and feedback, helped the students to develop their skills and feel confident in their ability. In self-determination theory, structure and guidance supports individuals' perceived competence, which is one of the basic psychological needs of human beings for self-determination (Ryan & Deci, 2002). Thus, in the next section I discuss the medical students' experiences of competence in their medical education and the impact that these experiences had on self-determination.

Discussion of World Café Competence Themes

The second World Café conversation focused on the basic psychological need of competence and addressed my second research question: What were medical students' perceptions of competence support in their medical education program, and what was the impact on them as learners? Similar to the autonomy conversation, I provided a basic definition of competence as described in the self-determination theory literature in order to provide a framework for the discussion that was consistent with the theory.

I asked participants to reflect on and discuss experiences in their medical education where they perceived that their competence was either supported or hindered and to consider how these experiences affected them as learners. Six themes arose from the data analysis. I discuss each theme in turn and how each relates to or is supported by self-determination theory.

Competence Theme 1: Confidence and Competence

The medical students in this study made a clear but important distinction between the terms competence and confidence, which demonstrated an understanding of the definition I was intending for the term competence. In self-determination theory, the term competence refers to the extent to which an individual feels capable of achieving a particular outcome (i.e., their confidence or effectance; Ryan & Deci, 2002; ten Cate, Kusurkar, & Williams, 2011). The students used the term competence in their discussion most often in relation to their feeling of confidence in their ability, which was consistent with the definition of competence in self-determination theory. The students often used the term confidence in place of competence. An important distinction must be made between these two terms, because in medical education, the term competence, or competency, is often used to describe a level of achievement or attainment of a skill, which can lead to confusion.

The students described a reciprocating relationship between perceived competence (i.e., confidence) and attained competence. They described experiences where increased confidence, supported by constructive feedback, positive encouragement, guidance, manageable content, and practice resulted in development of their skills and abilities (i.e., attained competence).

Attaining competence in a skill then resulted in more confidence in their ability to learn new or more complex content or skills. Conversely, students described low perceived competence, due to poor feedback, discouraging preceptor encounters, information overload, or lack of opportunities to practice, which resulted in negative self-talk, anxiety, and lack of motivation for the task. The students also noted that they often ended up performing poorly in those situations.

These findings were consistent with the findings from previous self-determination theory studies on perceived competence. Vallerand and Reid (1984) found that provision of informational positive feedback enabled intrinsic motivation through increased perceived competence. In contrast, negative feedback hindered intrinsic motivation by decreasing perceived competence. In other words, if one received positive feedback that supported confidence in one's ability to master a subject, that positive feedback enhanced intrinsic motivation. If a teacher provided negative feedback that hindered confidence in one's ability to master a task, that negative feedback hindered intrinsic motivation.

Many student comments referred to the impact of perceived competence on personal well-being. Students described teacher actions that generated low perceived competence in students, which resulted in stress, anxiety, and low resilience. Conversely, teacher actions that generated higher perceived competence supported positive affect and greater perseverance, which was consistent with the findings of Reis, Sheldon, Gable, Roscoe and Ryan (2000) who

found that when one's basic psychological needs were fulfilled, one experienced attributes consistent with positive well-being.

In addition, and to demonstrate the interrelatedness of the three basic psychological needs of self-determination theory, Ryan and Deci (2000a) explained that teacher actions that enhanced perceived competence more likely facilitated greater internalization of an externally regulated event. In other words, teachers who provided effective feedback and optimal challenges for students enhanced learner perceived competence and self-determination. In addition, teachers who provided competence-supportive information in an autonomy-supportive manner generated an internal perceived locus of causality in the student, which further supported learner self-determination.

Competence Theme 2: Feedback

The volume and nature of the comments from the students suggested that *feedback* was a significant and necessary supportive element for learner perceived competence. The students described in detail what they believed constituted effective feedback, and how provision of effective and ineffective feedback (or providing no feedback), positively and negatively affected their perceived competence, respectively.

In Table 5.1, I summarize the students' perspectives of effective and ineffective feedback, which were consistent with descriptions of basic elements of effective feedback in the literature (Archer, 2010; Brukner, Altkorn, Cook, Quinn, & McNabb, 1999; Gigante, Dell, & Sharkey, 2011; Hewson & Little, 1998; Ramani & Krackov, 2012), as well as descriptions of student perceptions of effective feedback (Poulos & Mahony, 2008).

Table 5.1

Students' Examples of Effective and Ineffective Feedback

Type of Feedback	
Effective	Ineffective
Occurred regularly Consistent feedback messages Specific, related to goals, whether verbal or written Timely Face-to-face Positive environment Encouraging Non-judgmental/supportive Provides structure/guidance for how to improve Feedback from multiple sources who have observed learner Feedback from single source who knows student well and has observed often**	Infrequent Inconsistent feedback messages General, vague, check boxes with "meets expectations" Delayed or not at all Handout* Hostile/tense environment Depreciating/threatening Judgmental/critical Made to feel helpless and incapable of succeeding Feedback from source who hardly knows learner

Note. The single asterisk indicates that students preferred face-to-face verbal communication of feedback, but accepted handouts with comments over no feedback at all or handouts with generic checkboxes. The double asterisks indicate that students preferred single source continuity of feedback to multiple source feedback, but saw advantages of multi-source.

Provision of feedback is an essential element of self-determination theory for supporting the basic psychological need of competence. Specifically, informational positive feedback provided in a non-controlling, autonomy-supportive manner generates higher levels of perceived competence and internal locus of causality, supportive of intrinsic motivation (Ryan & Deci, 2002; Deci & Ryan, 1985a; Carpentier & Mageau, 2013). Carpentier and Mageau (2013) also

demonstrated that even negative feedback presented in an informational and autonomy-supportive manner (i.e., provided a rationale for change; acknowledged learner perspectives; provided choice in solutions; and avoided guilt, shame, and controlling language) produced intrinsically motivated behaviours in individuals. Feedback presented to individuals in a controlling and judgmental fashion often hindered the feeling of perceived competence in the task, and resulted in a more external perceived locus of causality, which undermined intrinsic motivation (Ryan & Deci, 1985a).

Ryan and Deci (1985a) also noted that tasks of optimal challenge enabled perceived competence and facilitated intrinsic motivation. Optimal challenges involved tasks that were challenging enough to avoid boredom and loss of motivation, but not so overly challenging that they resulted in distress. Teachers can still hinder intrinsic motivation despite creating optimal challenges, using controlling and judgmental feedback. This highlights not only the influence of feedback on perceived competence, but also the important relationship between feedback and autonomy-supportive interactions between teachers and students in the development of perceived competence. I focus on this relationship in the next theme *positive environment and guidance*.

Competence Theme 3: Positive Environment and Guidance

The focus of the student discussions in this theme related to ensuring that the environment in which feedback was given was conducive to learning. The students emphasized that a positive learning environment was essential for providing and receiving feedback, and for developing perceived competence. Preceptors who were encouraging, non-judgmental, and supportive, and who believed in the learner and offered guidance were perceived to be effective in supporting learner confidence in their abilities. Learning environments where individuals felt stupid, belittled, judged, and unfairly compared to other students caused many students to

perceive themselves to be incompetent, which in turn hindered motivation to learn or improve their skills.

Students felt the most de-motivating action that preceptors used was “pimping”. In the original definition, pimping referred to a teaching practice where an attending physician asked challenging questions to learners (Brancati, 1989). The concept of pimping has become more controversial over time; where some authors have described it as a positive and supportive teaching tool (Brancati, 1989; Detsky, 2009), and others have described it as a negative tool used to humiliate and embarrass learners (Wear, Kokinova, Keck-McNulty & Aultman, 2005).

The students in the current study described pimping as instances where preceptors continuously asked students questions that were either purposefully, or perceived to be purposefully, obscure and beyond the level of the student in order to make students feel incompetent or stupid. The students in both World Cafés across sites were unanimous in their negative interpretation of the intent behind pimping. The students were also consistent in their description of the negative impact that pimping had on their motivation to learn and interact with their preceptors. The students described feelings of frustration, anxiety, and defeat, which significantly impacted their confidence.

From a self-determination theory perspective, more aggressive and belittling forms of pimping generated significant negative impact on both perceived competence and perceived locus of causality. Learners perceived the pimping act as a form of controlling behaviour (as opposed to autonomy-supportiveness) by the preceptor, which resulted in a more external perceived locus of causality. External perceived locus of causality resulted in an externally regulated or introjected form of extrinsic motivation, or possibly even amotivation in the learner (Ryan & Deci, 2002). Learners also developed a low perceived competence because the

questions were typically beyond their level of knowledge. Such overly difficult questions were beyond that optimally challenging level, which in turn negatively impacted learner perceived competence and hindered intrinsic motivation (Ryan & Deci, 1985a).

The students in this study noted that they wanted to be challenged and that they wanted their preceptors to ask questions to encourage thinking, problem solving, and proposing diagnosis and management plans. However, the students wanted this form of questioning to occur in a context of: (a) encouragement and positive emotional tone, to support autonomy by building a relationship between preceptor and learner; and, (b) guidance, realistic expectations, reassurance, and effective feedback, in order to support their perceived competence. In Table 5.2, I summarize students' perspectives of teaching practices that supported or hindered perceived competence.

When students experienced positive interactions with preceptors like those interactions listed in Table 5.2, they felt more confident in their abilities, more intrinsically motivated to engage in the learning process, and more motivated to learn independently. These findings were consistent with recommendations from self-determination theory literature for autonomy-supportive, structured learning environments (Kusurkar, Croiset, & ten Cate, 2011; Jang, Reeve, & Deci, 2010). Jang, Reeve, and Deci stated, "when teachers offer strong guidance, they provide students with the leadership and the scaffolding needed for students to instigate and maintain effort toward achieving their plans, goals, and learning objectives" (p. 590).

Guidance and support was discussed as a theme under the *autonomy* section with a focus on providing the appropriate structures, expectations, and guidance to support learner autonomy, because the added clarity allowed students to make informed choices based on complete information. Guidance and support related to the basic need of *competence* because a clear

understanding of expectations and the necessary scaffolding to create optimal challenges for students supported learner perceived competence, and therefore supported intrinsic motivation.

Table 5.2

Student Perspectives of Competence Supportive and Hindering Teaching Practices

Teaching Practices	
Supports Perceived Competence	Hinders Perceived Competence
Encouragement Positive emotional tone Builds positive relationships between teacher and learner Support and guidance (providing orientations, access to resources) Realistic expectations Reassurance that learner will not be abandoned Reassurance that learner is capable or progressing Effective feedback Graduated learning opportunities Safe learning environment to ask questions, make mistakes, address concerns	Learner belittling Judgmental environment Openly comparing learners Pimping Calling students out during class or small groups Preceptors or courses that do not provide clear expectations or objectives Environments where learners feel abandoned Lack of effective feedback Overwhelming learning environments (either outside comfort zone, or information overload)

Competence Theme 4: Practice and Application

In order for learners to feel confident in their ability to achieve their goals, or curricular expectations, they must be given the opportunity to practice their knowledge and skills. Specifically, learners must engage in practice that is informative and supports development and improvement, not only through repetition, but through feedback and reflection that supports more effective future actions (Ericsson, Krampe, & Tesch-Romer, 1993). This specific type of practice is referred to as deliberate practice. When individuals receive informative feedback that

is supportive of their development, they feel a greater sense of personal effectance and ability, which supports self-determination (Ryan & Deci, 2002).

Learners in this study wanted more practice tests and more feedback from their examinations in order to learn from their mistakes and to improve their understanding of the material. The focus of their improvement was not related to grades; rather, practice was intended to support mastery and to ensure that when these students started helping patients, they would have the necessary knowledge and skills to manage those problems safely and effectively. Further to this goal of effective patient care, the learners also expressed desire for more case-based problems and procedural skill development. Learners perceived that without opportunities to work through realistic situations in safe contexts they would not be prepared for real clinical situations. In other words, the learners experienced a low perceived competence without practice, which affected their motivation toward engagement in clinical contexts.

Although the learners emphasized the importance of feedback as part of effective deliberate practice, they also stressed that they needed adequate time to develop and practice their knowledge and skills. Without adequate allocation of time, the students experienced low perceived competence despite being given the opportunity to practice. Ericsson (2004) noted that time was an essential component of deliberate practice. Experts must dedicate years to the development of their expertise. The key ingredient to development of mastery is the deliberate nature of practice (i.e., repetition with feedback and reflection); however, dedicated time for practice is an enabling factor of deliberate practice and development of mastery.

The availability and provision of time for practice appears to be an element that is taken for granted in the discussion of practice in medical education. Individuals require significant amounts of time to establish proficiency in any area of knowledge or skill development; yet, the

students in this study believed that the amount of time available to practice their knowledge and skills in the curriculum was limited. According to the students, the availability and provision of time for students to engage in deliberate practice was limited by two elements: (a) the significant depth and breadth of the content to learn, and (b) by the insufficient number of faculty and infrastructure (i.e., clinical space) necessary to support effective deliberate practice.

The students also noted the importance of application of knowledge in supporting their competence. Application is a form of practice because it involves using newly acquired knowledge to solve problems. Given this perspective, application exercises offered practice to learners, which supported their perceived competence and self-determination, which in turn supported their learning. Furthermore, from a self-determination theory perspective, direct applicability of knowledge demonstrated the relevance of that knowledge to the learners. When students realized the relevance of the knowledge, they endorsed learning that information, even if learning that information was not originally interesting to them, because that information was congruent with their values and goals. In other words, relevant application activities supported greater learner autonomy through an internal perceived locus of causality (Ryan & Deci, 2000a).

The students often discussed the themes of feedback, guidance, practice, and application simultaneously during the café group conversations as elements supportive of their perceived competence. Such conversations reinforced the individual importance of each theme, but also emphasized the connectedness of each theme in supporting competence and autonomy.

Competence Theme 5: Information Overload

Many of the café groups expressed their concern and frustration with the amount of information being taught in the medical curriculum. When referring to the volume of content being taught, the students used words like “insane,” “excessive,” “overwhelming,” “frustrating,”

and “physically draining;” therefore, many students perceived that they were incapable of actually learning the material, which negatively impacted their motivation to learn and their personal well-being.

A critical element necessary to support self-determination involves ensuring optimal challenge for the individual (Ryan & Deci, 1985a). Optimal challenges include any task, stimulus, or activity that requires a level of effort by an individual to enable success and avoid boredom, yet not be overwhelming to the point of being prohibitive. Such optimally challenging tasks or stimuli support one’s perceived competence and, therefore, one’s self-determination. When individuals experience challenges that are actually or perceived to be beyond their ability to accomplish, their perceived competence in that task is undermined, which hinders self-determination and can ultimately negatively impact learning. Ryan and Deci explained that teachers who employed controlled and pressured non-optimal challenges generated factual, rote-type learning in their students rather than more integrative, contextual, and deeper understanding. In addition, non-optimal challenges associated with low self-determination negatively impacted non-academic measures such as self-esteem and general well-being (Ryan & Deci, 2000b).

The café groups discussed another concern that compounded the issue of information overload. Many of the students believed that much of the content was either irrelevant to the their medical training, or was out of date. Therefore, these students found it difficult to become motivated to learn because they were unable to situate their learning in a meaningful context that was congruent with or applicable to medicine.

These students felt overwhelmed by the amount of content, which impacted their perceived competence and self-determination. Furthermore, these students felt forced to learn material that they perceived to be irrelevant for or inconsistent with their learning goals for

medical school. When individuals feel forced to engage, or they do not endorse activities that are incongruent with their personal values and goals, they experience an external perceived locus of causality, which undermines autonomy and self-determination (Ryan & Deci, 2000a). Such a pressured and controlled environment coupled with a feeling of being overwhelmed by the volume of content not only affects motivation to learn, but also negatively impacts well-being, manifested as distress, anxiety, and low-self-esteem (Ryan & Deci, 2000b), which was consistent with the experiences of the students in this study.

Summary of Competence

In this section, I discussed medical students' perspectives of competence-supportive or hindering events in their medical education and the impact that these events had on learner perceived competence, self-determination, and well-being. Medical students shared their experiences of high and low perceived competence and their perspectives on various teacher actions that either supported or hindered their perceived competence. Teacher actions or teaching methods that supported competence included: (a) providing effective constructive feedback, in a positive, structured, and supportive environment with appropriate guidance; (b) providing more opportunities for deliberate practice and application of information; and (c) managing the amount of content and demonstrating the relevance of the content to learners.

When the students experienced these teaching methods, they perceived greater personal effectance, which supported greater self-determination to learn. When the students in this study did not experience competence supportive environments, they experienced low perceived competence and low well-being. Low well-being manifested as high stress, anxiety, and low resilience. These findings were consistent with the self-determination theory literature related to low perceived competence (Ryan & Deci, 2000b; Reis, Sheldon, Gable, Roscoe & Ryan, 2000).

Students provided significantly more comments about competence-hindering experiences and the impact on well-being compared to comments about competence-supportive experiences, which suggested the magnitude of the negative impact of competence-hindering experiences. Student conversations related to competence-supportive environments tended to focus on the motivational impact and less on the psychological impact, although a positive psychological impact was likely to have occurred (Ryan & Deci, 2000b).

Ryan and Deci (2002) explained that individuals must first feel autonomous in their actions in order for competence supportive methods to have an impact on self-determination. In other words, in order for individuals to experience self-determination, a competence-supportive environment alone is insufficient. Individuals must experience competence-supportiveness with a pre-existing internal perceived locus of causality in order to experience self-determination. This construct was important as it related to the themes of *practice and application* and *information overload*. For example, if the students were asked to practice and apply content that they perceived to be irrelevant, they experienced an external perceived locus of causality because of the perceived irrelevance. As such, any application exercises (designed to support perceived competence) of irrelevant content would fail to support their self-determination. Content relevance is an important factor in supporting an internal perceived locus of causality (Reeve, 2002). Without content relevance, learners engage in practice out of obligation or guilt, rather than based on integration with personal goals.

In the next section, I discuss the medical students' perspectives of relatedness in their medical education and the impact on self-determination. Relatedness is the third basic need of self-determination.

Discussion of World Café Relatedness Themes

The third World Café conversation focused on the basic psychological need of relatedness and addressed my third research question: What were medical students' experiences of relatedness support with their teachers and what was the impact on them as learners? Similar to the autonomy and competence café conversations, before beginning the conversations, I provided a basic definition of relatedness as described in the self-determination theory literature in order to provide a definition for the discussion that was consistent with the theory.

I asked the participants reflect on and discuss the extent to which they felt that relatedness with their teachers impacted their motivation to learn. Two major themes arose from the data analysis. The first theme was organized based on actions that teachers took to develop relatedness with students. The second theme was based on inherent qualities of a teacher that made him or her more relatable to students. Some qualities described by the students were modifiable (i.e., under the control of the teacher) whereas others were non-modifiable or innate to the teacher. I discuss each theme and their subthemes, and how each relates to or is supported by self-determination theory.

Relatedness Theme 1: Relatedness Actions of Teachers

This theme focused on actions that teachers employed in and out of class to establish relatedness or connectedness with learners in order to motivate learners. Relatedness plays an important supportive role in both intrinsic motivation and internalization of extrinsic motivation in self-determination theory. Ryan and Deci (2002) explained that relatedness plays less of a critical role in intrinsic motivation, because individuals engage in many solitary activities and still exert intrinsic motivation for that activity (i.e., relatedness with other may not be required). Researchers have demonstrated that relatedness is relevant in intrinsic motivation, where they

found that children explored more and more freely engaged their curiosity if they experienced secure attachment to, caring, and support from either parents or teachers (Frodi, Bridges, & Grolnick, 1985; Anderson, Manoogian, & Reznick, 1976).

Relatedness plays a greater role in extrinsic motivation as part of the internalization process related to organismic integration theory (Ryan & Deci, 2002). For example, when individuals experience relatedness with others, this connectedness supports an individual's internalization of initially externally regulated stimuli, which supports an internal perceived locus of causality and greater self-determination. Alternatively, individuals may internalize externally regulated stimuli to establish relatedness with others, but as a result, they experience greater self-determination (Ryan & Deci, 2002). In either situation, the experience of relatedness, or that sense of belonging, is a key element in the internalization process, which leads individuals to endorse an action as congruent with their own goals and values, leading to more autonomous, self-determined motivation (Niemic & Ryan, 2009). Relatedness emphasizes the social element of motivation.

In the teacher-student context, *belonging* refers to a student's perception that the teacher likes, values, and respects him or her (Niemic & Ryan, 2009). The findings of this study were consistent with those of past research findings because medical students who experienced positive relatedness with their teachers or preceptors described a greater sense of autonomous motivation. In situations of negative relatedness, students experienced disconnectedness from their teachers and described feeling little motivation to engage with their teachers or to learn the content being taught by that teacher.

Two subthemes arose from the data based on students' discussions of actions that teachers took to establish relatedness. Subtheme one emphasized the importance of teachers

taking an interest in learners, both academically and personally, to support relatedness and self-determination. Actions taken by teachers to demonstrate interest in learners ranged from relatively simple, intuitive acts (e.g., getting to know their names and personal interests), to more complex acts that involved an emotional or temporal investment such as discovering academic interests or establishing emotional connections. All actions described by students were relevant to all learning contexts; however, some actions were more suitable to clinical, one-on-one learning contexts and others more suitable to the classroom context.

In subtheme two, the student conversations focused on the importance of caring and compassionate teachers in establishing relatedness and supporting motivation. Student interpretations of caring teachers ranged from teachers who went “the extra mile” to help students learn the material, to teachers who were respectful and created a respectful learning environment, to teachers who showed empathy for students. I created these two subthemes of teacher interest and teacher compassion because the student comments for each subtheme were specific enough to support individual categorization; however, I discuss the two subthemes together because they produced a similar impact on the students’ self-determination.

In Table 5.3, I list the actions of teachers that supported relatedness with students. When teachers engaged with students in relatedness-supportive ways, the students perceived that the teacher or preceptor wanted to help and cared about learner success and well-being. When teachers created a positive relationship, the students knew they could rely on their teachers for help even if teachers did not explicitly offer it. Ryan, Stiller, and Lynch (1994) found that students who knew they could rely on their teachers demonstrated greater confidence and self-reliance. In this study, students explained that positive relatedness gave them the confidence to push boundaries, ask questions, and more fully engage in learning, which suggested greater

confidence. The students also perceived that they were part of the team, which was a significant source of motivation to learn and engage with a teacher.

Table 5.3

Relatedness Actions of Teachers

Teacher takes interest	Teacher caring and compassion
Finding common academic ground or goals	Going beyond what is expected (help outside office hours, willingness to answer questions, demonstrate effort to teach well)
Acknowledging and incorporating learner interests	Being non-judgmental
Making learner feel part of the team	Being respectful and empathic (positive interactions with students, understand time and stress demands, avoid yelling at learners, condescension, or pimping)
Being open minded	Expressing thanks when appropriate
Willingness to help	Approachable
Finding out level of learner knowledge	

Connectedness with teachers supported students' existing intrinsic motivation to learn especially in relation to activities and topics that were already of high interest to students. However, not everything being taught was intrinsically interesting to each student. Students described various topics within courses or clinical rotations as irrelevant, uninteresting, or not related to their primary interests. However, these students also noted that the act of a teacher taking interest, finding common ground, or being supportive and caring led to greater endorsement of that initially irrelevant learning experience and greater autonomous motivation to learn. These positive relatedness experiences allowed students to enjoy the learning experience and made them want to learn from the experience despite the experience not being of interest

originally. Motivation to learn and engage developed because of the enthusiasm, supportiveness, and connectedness with the teacher.

Niemiec and Ryan (2009) explained that the outcome of greater autonomous motivation was “higher-quality outcomes, enhanced wellness, and greater value for what school has to offer” (p. 140). Ryan, Stiller, and Lynch (1994), in a study of early adolescent students, found that learner relatedness with teachers and parents was an essential element that supported the internalization of externally regulated (extrinsically motivated) behaviours. They also explained that greater relatedness with teachers supported greater motivation to learn, engagement, perceived competence, well-being, and self-esteem. Engagement is an important construct in self-determination because engagement is a behavioural manifestation of an individual’s inward motivational status (Reeve, 2002, p.194). Thus, if an individual demonstrates a high level of engagement in an activity, then they are likely experiencing a high level of motivation.

Although relatedness plays an important role in internalization, Ryan and Deci (2000a) also noted that relatedness alone could not fully support internalization. The internalization process requires the interaction of the three basic needs of autonomy, competence, and relatedness, the most important of these being autonomy. Ryan and Deci explained that only when individuals perceived a sense of autonomy were they able to internalize an external regulation, because the process of internalization involved volition based on understanding the value of the regulation related to personal goals. Relatedness alone may result in motivation; however, the individual’s motivation to act may derive out of desire to please the teacher, or out of guilt rather than from congruency with personal goals. Several comments from participants indicated the importance of this construct by their willingness to expend effort because they observed that their teachers expended effort. The students’ reciprocation of effort might have

come from an introjected, controlled regulation rather than from a more integrated form of autonomous motivation. The data from this research were suggestive of this possibility but not conclusive.

Ryan and Deci (2000a) and Ryan, Stiller, and Lynch (1994) explained that relatedness and competence supported autonomy formation through the establishment of trust and the development of self-esteem and perceived competence. Therefore, relatedness and competence play an important role in internalization and self-determination even if they alone cannot produce full internalization.

It was my general impression, based on the discussions and general emotional tone of the conversations, that the students had positive relatedness with their preceptors and teachers, and that they felt a sense of belonging. These positive relationships supported the students' motivation, engagement, and self-esteem, as indicated by comments where students described feeling good about themselves and being "part of the team." However, my sense of the data was that student relatedness with their teachers was precarious and that negative relatedness experiences with preceptors and teachers could easily transform perceived competence, positive self-esteem, and motivation into perceptions of isolation and disconnection, which negatively impacted motivation to learn, engagement, and self-esteem.

Negative relatedness experiences resulted from either teacher action or inaction, and the students noted that the most significant impact came from teacher inaction. Examples of teacher inaction included: (a) failing to make an effort to try to get to know students; (b) failing to actively engage students in the learning process; (c) failing to determine what the students knew before beginning their lectures; or, (d) failing to demonstrate that they cared about the students and wanted to help them to be successful. Depending on the nature of the negative experience,

the students described feeling disconnected, embarrassed, frustrated, and as though they had little control over their learning. Therefore, the students experienced a lack of motivation to engage and learn because if their teacher did not care, then the students found it difficult to care. Self-esteem was negatively impacted for some students, as indicated by feelings of not being part of the team, or fears of being judged for not being interested in the “right specialty.”

The most significant negative relatedness experience related to teacher action described by the medical students was “pimping,” which was described in the *competence* section. The perceptions of the medical students in this study and in more recent literature about pimping suggested that pimping has transformed into a negative interaction with significant negative consequences for learner self-determination (Wear, Kokinova, Keck-McNulty, & Aultman, 2005).

The medical students perceived that some of their teachers asked unrealistically challenging questions in order to make students feel dumb, to belittle them, or to exert their status in the power relationship between teacher and learner. The impact on students of a negative relatedness learning environment included: (a) a fear of making mistakes and offering opinions, (b) experiencing little motivation to learn because they felt it would not make a difference to their teacher, (c) diminished confidence in their abilities (i.e., low perceived competence), and (d) significantly lowered self-esteem because of belittling and the feeling that they could not please their teachers. Such negative relationships between teachers and students resulted in disconnectedness. Pimping caused many students to experience an external perceived locus of causality, which hindered their self-determination. As discussed in the *competence* theme, the students were not opposed to having their teachers ask them questions and test their

learning; however, the students expressed a clear desire for these interactions to be positive, encouraging, and free from judgment and hierarchical dynamics.

In some circumstances, the students' perceptions of negative relatedness were related to systemic challenges with program organization, rather than a lack of interest or caring by the teacher. In other words, the systems in place at the program level related to teaching expectations prohibited effective relatedness. Many courses had several different teachers teaching about specific topics for which they had expertise. The students perceived that the "revolving door of teachers" left few opportunities for students to feel related to their teachers, which affected their engagement in class.

For the students in the Regina cohort, video-conferenced lectures significantly impaired their relatedness with Saskatoon-based teachers (the majority of their teachers) because the technology made them feel disconnected from, and in some cases, dismissed by their teachers. The Regina students could not have face-to-face communication with Saskatoon-based teachers, which the students described as a significant barrier to their relationship building and their perceptions of being a part of the College of Medicine.

Distance education instructional designers refer to Lebow's (1993) five principles of constructivist values for instructional design as a guide to integrating constructivism into distance education programs (See Table 5.4; Tam, 2000). Lebow's principles relate to the three basic psychological needs of self-determination. Principles one through four are related to the principle of autonomy-supportiveness because they refer to supporting choice, relevance, self-regulation, and personal responsibility for learning. Principles four and five, and elements of principle one are related to the principle competency supportiveness, because they refer to skill development and feedback processes.

Table 5.4

Lebow's Principles of Constructivist Values for Instructional Design

Principle	Constructivist Value
1	<p>Maintain a buffer between the learner and the potentially damaging effects of instructional practices</p> <p>Increase effectiveness on the affective domain of learning</p> <p>Make instruction personally relevant to the learner</p> <p>Help learners develop skills, attitudes and beliefs that support self-regulation of the learning process</p> <p>Balance the tendency to control the learning situation with a desire to promote personal autonomy</p> <p>Classrooms and learning should be set up to allow for success. Give more responsibility to the student. Make them want to take hold of the new style of learning and be successful.</p>
2	Provide a context for learning that supports both autonomy and relatedness
3	Embed the reasons for learning into the learning activity itself
4	Support self-regulated learning by promoting skills and attitudes that enable the learner to assume increasing responsibility for the developmental restructuring process
5	Strengthen the learner's tendency to engage in intentional learning processes, especially by encouraging the strategic exploration of errors

Principle two specifically acknowledges the importance of relatedness. In a social constructivist environment where the teacher assumes the role of guide, facilitator, and co-creator of knowledge, the notion of establishing an effective positive relationship between teacher and student becomes increasingly important for supporting learning (Tam, 2000; Murphy & Rodriguez-Manzanares, 2009). In distributed education, effective relationships between teachers and students can be supported by application of Lebow's principles, and when

implemented effectively supports learner self-determination through reinforcement of learners' basic psychological needs.

When the relatedness issues of distance education and rapid turnover of teachers were combined, as in the context of the Regina medical student cohort, they produced a depersonalizing educational experience, which impacted learner self-determination. Murphy and Rodriguez-Manzanares (2009) presented a list of relatedness actions for teachers involved in distance education to help offset the disconnect students experienced from video-conferencing and to enable learner motivation. Examples of relatedness actions included: (a) provide one-on-one real-time communication with students; (b) coordinate intermittent phone conversations or face-to-face meetings; (c) establish clear and open lines of communication; and (d) offer help to students in difficulty.

The medical students in this study experienced both positive and negative relatedness with their teachers. The teachers played a significant role in either supporting or hindering relatedness through their actions and through inaction. Inaction had a particularly significant impact on learners, because inaction was perceived by students to be a strong indication that a teacher did not care about the students or their learning experience. With positive experiences, the students felt a greater sense of connectedness to the teacher, the team, and possibly even to the profession, which served as strong support of their self-determination.

Relatedness Theme 2: Relatedness Qualities of Teachers

The first relatedness theme focused on the actions or inaction of teachers that supported relatedness and therefore learner motivation. The second theme focused on the innate qualities of teachers that supported relatedness between teachers and learners regardless of the effort teachers put into the interaction. Innate teacher qualities included enthusiasm, sense of humour,

humanity, humility, and age. In this section, I discuss students' perspectives on the importance of these innate teacher qualities, and present literature findings relevant to these innate teacher qualities. I note that the impact of the innate teacher qualities on learner-teacher relatedness and learner motivation was the same as *theme one: relatedness actions by teachers*. The impact was similar because the students perceived that if relatedness was supported then relatedness would support learner self-determination.

Enthusiasm and sense of humour. Students believed that enthusiasm facilitated relatedness because the excitement and energy that the teacher exerted generated excitement and energy in the students. Teacher enthusiasm was a powerful motivator for students, where several café groups noted that enthusiastic teachers could significantly influence students' decisions about career choice. Students also noted that a teacher's lack of enthusiasm negatively affected student enthusiasm and could equally negatively influence career choice.

Patrick, Hisley, and Kempler (2000) used self-determination theory to investigate teacher classroom behaviours supportive of intrinsic motivation. They found that teacher enthusiasm was the most powerful predictor of intrinsic motivation. Enthusiasm was more predictive of intrinsic motivation than autonomy-supportiveness. Ryan and Powelson (1991) noted that autonomy-supportiveness and relatedness were closely linked such that students who perceived their teachers to be autonomy-supportive also described relatedness characteristics. Ryan and Powelson explained that the "experience of relatedness is at least in part founded on one's sense that the other respects and supports one's autonomy" (p.61). Their description of the link between autonomy-support and relatedness supports Ryan and Deci's (2000a) argument that relatedness plays a supportive role in enabling an individual's internalization, but that autonomy-supportiveness is the primary basic need required to support self-determination.

The medical students appreciated teachers with a sense of humour because they believed they were better able to connect with these teachers. The students noted that humour “humanized” the teacher, which made the teacher more relatable. Teacher use of in-class humour made students feel more at ease and more willing to interact and participate in class. Powell and Andresen (1985) found that appropriate use of humour effectively created a positive classroom environment, encouraged student participation, and sustained students’ attention. In other words, humour, as an element of relatedness can be an effective tool to set the motivational context for students. Humour can also have negative implications for relatedness, and therefore must be used with care. Kher, Molstad, and Donahue (1999) suggest that *appropriate* humour avoids reference to individuals or groups; avoids insults, sarcasm, and sexually suggestive content; and does not accentuate the status relationship between teacher and student.

Humanity and humility. Similar to the perception that a teacher’s sense of humour demonstrated “humanness,” students perceived that teacher actions demonstrating humanity and humility supported relatedness with their teachers. Students experienced greater connection to teachers if their teachers: (a) acknowledged and were honest about their own struggles; (b) admitted when they did not know an answer to a question and then tried to find an answer; and (c) were honest about mistakes they have made in the past and learned from them. Students noted a strong connection to teachers who showed humility, because they believed that it “leveled” the playing field, not in the sense that the students perceived a moral advantage over their teachers; rather, humility eased the hierarchical barrier between teacher and student. Consequently, the students felt more at ease to ask questions, make mistakes, and participate more freely without judgment, which served as a source of motivation to learn.

Age as factor in relatedness. Although not as frequently reported as the other innate teacher qualities supportive of relatedness, some participants discussed that they felt greater relatedness to teachers who were relatively close in age. The students explained that stronger relatedness with younger teachers was due to the ability of younger teachers to better relate to the student context (i.e., “they just went through medical school,” “they remember what it was like,” and “they understand our generation”).

Limited research exists that investigates the impact of teacher age on student perceived relatedness support and self-determination. Filak and Sheldon (2003) found a negative correlation between teacher age and relatedness; however, their results were not statistically significant. The only teacher characteristic that had a statistically significant correlation with relatedness was the amount of experience a teacher had teaching a specific course, which produced a large negative correlation.

A number of students in the current study, from both the Saskatoon and the Regina sites, found it easier to relate to younger instructors. They also perceived younger instructors to be more relatable to students. Further research is required to provide a quantitative measure of this student perception of instructor age and relatedness. Perhaps age and relatedness was a unique perception for specific students; or perhaps, consistent with Filak and Sheldon (2003), the younger faculty had less experience teaching specific topics or courses in the medical education program and the students misattributed the relatedness to age instead of the enthusiasm related to teaching a new subject.

From a theoretical perspective, a rationale for the students’ perceptions of better relatedness with younger teachers could be based on social congruence in role theory (Lockspeiser, O’Sullivan, Teherani, & Muller, 2008). Social congruence was described in the

context of peer teaching to refer to the closeness in age and experience of peers that created relatedness, which fostered greater trust, openness, and dialogue between learner and near-peer than would be achieved between an older teacher and student. Social congruence was originally intended for peer- and near-peer teaching; however, in the context of the current study involving adult learners, perhaps younger teachers were perceived as a “near-peers” by students, particularly if that younger teacher used other autonomy-supportive and relatedness approaches in his or her teaching.

Summary of Relatedness

In this section, I discussed medical students’ perspectives of teacher relatedness-supportive or hindering elements in their medical education and the impact that these events had on learner self-determination. Medical students shared many experiences of positive and negative relatedness with their teachers as well as many perspectives on different teacher actions and qualities that either supported or hindered relatedness. Teacher actions that supported relatedness included: (a) taking interest in learners by finding common ground with students, and getting to know learners personally and academically; and, (b) demonstrating caring and compassion by making themselves available, and being respectful and empathetic to learners. Specifically, the students emphasized the negative impact that “pimping” had on relatedness with their teachers, and consequently on their motivation. Innate teacher qualities such as sense of humour, humility, humanity, and age also played an important role in helping students to establish a connection with their teachers, which made them feel safe in their learning environment, and more motivated to engage and learn.

In the next section, I discuss a common thread that students discussed under each of the three basic psychological needs in self-determination theory, the importance of the desire to teach in supporting autonomy, competence, and relatedness.

Desire to Teach Essential to Support Basic Needs

The medical students in my study consistently noted that a teacher's desire to teach was a key element in supporting autonomy, competence, and relatedness. The students also noted that they could easily identify which teachers wanted to teach and which teachers did not want to teach. The students' perceptions of a teacher's desire to teach were based on several pedagogical actions and personal characteristics, which are listed in Table 5.5.

Table 5.5

Indicators of Desire to Teach and Impact on Basic Psychological Needs

Desire to Teach Indicator	Impact on Basic Psychological Need
Enthusiasm	Autonomy, Relatedness
Passion for subject	Autonomy, Relatedness
Preparation of Materials	Competence, Relatedness
Investment of Time and Effort	Autonomy, Competence, Relatedness
Demonstrates Relevance	Autonomy

Teacher enthusiasm and passion for the subject supported learner autonomy because the energy and interest that the teacher put into teaching “rubbed off” on the students and fostered a desire in the students to learn the material being taught with equal energy and enthusiasm. Even if the subject was not immediately interesting to the students, they were motivated to learn because of the enjoyment of the experience. Students believed that teachers who wanted to teach consistently demonstrated the relevance or applicability of the content they were teaching. Providing relevance served as a powerful source of autonomous motivation, because the students

could visualize where the topic fit into their own goals, and they were able to integrate the experience into their goal structure.

Teacher preparation supported learner perceived competence because when the teacher was prepared the expectations were clear and the students were able to learn more effectively. Therefore, the students perceived that they were able to achieve their desired outcomes.

Teacher investment of time and effort supported learner autonomy, because when the learners saw the commitment of their teachers to teaching, they endorsed the importance or value of the experience, and therefore wanted to make a greater commitment to their learning. This desire and volitional commitment by the learners, supported through the actions of their teachers was an example of self-determined motivation. Teacher investment of time and effort supported learner perceived competence because the students perceived that their teachers were there to support them in the mastery of their knowledge and skills through application, practice, and feedback.

Almost all desire-to-teach indicators influenced learner relatedness with their teachers. Enthusiasm, passion, preparation, and investment of time and effort also supported learner relatedness because the students believed that through these indicators the teacher cared about the students, wanted the students to be successful, and that the learning environment would be a safe place for students to engage and learn.

Implications for Practice, Theory, and Future Research

This exploratory study of students' perspectives of self-determination in their medical education found several consistencies with the existing literature on learner self-determination. This study was guided by action research methodological underpinnings; therefore I first discuss

the implications for practice in medical education. Following this, I discuss the implications for theory and revisit my conceptual framework. Finally, I discuss possibilities for future research.

Implications for Practice

Based on the existing literature and the findings from this study, there are a number of implications for teachers of undergraduate medical students to consider in order to effectively and purposefully support learner self-determination. I present each implication and discuss how it supports, hinders, or relates to the three basic psychological needs of autonomy, competence, and relatedness and thereby supports self-determination.

Desire to teach. The students' perception of a teacher's desire to teach was an important overarching theme for this research. The students expressed confidence in their ability to differentiate among teachers who wanted to teach and those who did not, which had a significant impact on the three basic psychological needs. Teachers who did not want to teach did not engage learners or make attempts to demonstrate the relevance of the content they were teaching, so the students perceived that they were left out of the learning process (i.e., no autonomy). Teachers who did not want to teach made less of an effort to support learners, provide feedback, or find means to actively engage learners in practice and application, which left students with lower confidence in their abilities (i.e., low perceived competence). The students also felt personally disconnected from teachers who did not want to teach (i.e., no relatedness).

The students recommended that a more intensive faculty development program providing teachers with the necessary tools to be more effective teachers might enhance their desire to teach. The students also suggested the development of programs to support greater involvement of teachers who want to teach more, and that there should be greater accountability measures for teachers who do not want to teach and negatively impact students in the process.

Some Canadian faculties of medicine have developed programs where faculty members with a desire for teaching are provided with in-depth teacher training, feedback, and monitoring. These teachers receive extensive teaching responsibilities throughout the medical school curriculum, and their teaching responsibilities include both discipline and non-discipline specific teaching (University of Calgary, Faculty of Medicine Website, accessed January 15, 2015). Not only do these types of programs improve overall teaching, but based on the experiences of the students in this study, having dedicated teachers also supports learner motivation. Training programs for dedicated teachers could provide teaching about autonomy and competence supportive techniques as well as the importance of learner relatedness in supporting motivation. Relatedness would be a natural consequence with the use of dedicated teachers because the teachers would have a chance to become better acquainted with learners and learners would perceive that these teachers cared about them (Hirsh, Ogur, Thibault, & Cox, 2007).

The use of dedicated teachers would also address the issue of the “revolving door of teachers” in the pre-clerkship portion of the medical program, which had a significant impact on learner relatedness with teachers. Hirsh, Ogur, Thibault, and Cox (2007) discussed the importance of continuity of supervision during clerkship as a means of providing support to students for taking intellectual risks, supporting emotional well-being, and providing effective feedback (p. 860). Haidet and Stein (2006) emphasized the importance of positive patient-doctor relationships in clinical care for supporting positive patient outcomes and drew a parallel to the importance of positive student-teacher relationships and how they supported positive learning outcomes. Haidet and Stein (2006, p.S18) noted:

A commonly held assumption is that the central task of teaching is to deliver...content to students, who then store that content in their minds for future retrieval and use. The

personhood of the teacher and the student in such a paradigm is lost, because the major focus of the educational activity becomes content delivery rather than creating an interpersonal context that fosters learning.

Based on the student perceptions in my study, I suggest that the amount of time that a teacher actually spends with students, in addition to a desire to teach, plays an important role in establishing the interpersonal context to which Haidet and Stein referred. This finding was consistent with Schormair, Swietlik, Hofmann, Wilm, and Witte (1992), who interviewed medical teachers about their lack of motivation to teach and found that insufficient teacher continuity was a significant contributor. Teachers assigned to give one lecture in a course, had little incentive to build relationships with students or to establish continuity of learning. Yet, students perceived teacher continuity to be a form of relatedness because they believed the continuity demonstrated that teachers cared about the learners. Schormair, et al. (1992) argued for increased teacher continuity in courses and in clinical rotations to support relatedness and learning outcomes.

Structured autonomy. The café conversations related to autonomy in this study focused on the balance between the students' desire for autonomy but also on the provision of structure and guidance. That is, students wanted to be able to make decisions about their learning (e.g., how to approach learning, how to use their time, how to focus their learning), but they also wanted to have guidance, feedback and assurance that the decisions they made about their learning were appropriate and would help them to be successful learners and good doctors.

The essential point is that autonomy is not equivalent to independence. Autonomy refers to the opportunities when individuals are able to act with volition (Ryan & Deci, 2002). In some situations, an individual might desire more dependence, expressed by a desire for more guidance

and structure. In other situations, a learner may desire more freedom, independence, and less guidance. Teachers and curricula need to be flexible to these varying needs through a structured autonomy approach, where teachers support learner autonomy, but also establish clear expectations for students with monitoring and feedback. Autonomy supportiveness creates an internal perceived locus of causality and appropriate structure and guidance supports learner perceived competence (Jang, Reeve, & Deci, 2010). Together, these elements support intrinsic, self-determined learner motivation.

In organizing the curriculum, most medical schools have allocated curricular time for independent study time. Some schools call this self-directed learning. Independent study indicates that the student is working alone, and self-directed learning implies that the learner is directing their learning, perhaps by focusing on areas of weakness or topics of interest. Learners may also use this time to learn topics unrelated to the curriculum. Open-ended allocation of time is important to allow and encourage learners to explore their interests and to strengthen their knowledge; however, there are also times when learners, especially novice learners, want guidance and structure because they may not be able to accurately identify their learning needs (Brydges, Dubrowski, & Regehr, 2010). Therefore, curriculum planners and teachers should also consider providing directed self-guided learning or guided self-learning opportunities. In this context, the learner is still able to act with an appropriate level of autonomy in their independent learning time, but they also receive an appropriate level of guidance and structure, which supports learner perceived competence.

Some of the café conversations focused on the inherent non-autonomous and controlling nature of a curriculum. In other words, a curriculum by its very nature is controlling. There is truth in this perspective; however, perhaps learners' perspectives would be different if they

experienced greater autonomy-supportiveness balanced with appropriate *structure* within the curriculum. In order to achieve structured autonomy, the curriculum schedule must allow a level of flexibility for learner self-study and self-direction. Examples of actions teachers could employ to support autonomy include: (a) acknowledging learners' perspectives and interests in the learning process, (b) emphasizing content and learning process relevance, and (c) offering opportunities for practice and application, which reinforces relevance (Jang, Reeve, & Deci, 2010).

Examples of structured autonomy-supportive teacher actions mentioned by the students in the current study that were consistent with Jang et al. (2010) included: (a) the use of the flipped classroom, which shifted some of the learning into hands of learners, provided relevance and application during class, but also provided support during class time when needed the most; (b) teachers who provided choice to learners about the focus of topics during in-class sessions; and (c) teachers who made their teaching sessions interesting and relevant to the learners. Quality student-teacher relatedness is an essential ingredient that enables autonomy-supportiveness by teachers (Ryan & Deci, 2000a). In other words, when teachers care about their learners, demonstrate enthusiasm and passion, and establish trusting relationships, then they likely act in autonomy-supportive ways with their students.

Relevance and information overload. I placed the concepts of relevance and information overload together because although they each have an impact on learner motivation, they also share common ground. I address each concept separately first, then describe how they interact.

The emphasis of the relevance of material being taught by teachers has been recognized as an essential supportive element for learner autonomy (Reeve, 2002; Jang, Reeve, & Deci,

2010). Learners are not intrinsically motivated to learn everything they are taught. Learners perceive some topics to be uninteresting or irrelevant for their education. Regardless if this perception is correct or incorrect, teachers must help learners to recognize the relevance.

Teachers who impress upon students that what they are teaching is important and necessary for a learner's education and future, support the internalization process toward an integrated form of extrinsic motivation. Although integrated regulation is a form of extrinsic motivation and not intrinsic motivation in the purest form, the result of the internalization process is an autonomous form of motivation, which generates the same benefits for learner academic and non-academic outcomes. Therefore, medical teachers, particularly when teaching courses where students might not easily identify the relevance to medical practice (e.g., basic sciences), must place a greater effort on ensuring that students understand the relevance of the content being taught to support autonomous motivation to learn the material and support better learning (Ryan & Deci, 2000a).

Information overload has been a chronic issue in medical education (Anderson & Graham, 1980; Harden & Davis, 1995) that continues to be a challenge for medical educators and curriculum planners. Medical educators have suggested that content overload has contributed to the high levels of stress and poor well-being of many medical students (Anderson & Graham, 1980). From a motivational perspective, when the medical students in this study were presented with what they perceived to be an insurmountable amount of material to learn, they felt so overwhelmed that they perceived they were not capable of achieving their desired outcome (e.g., "am I good enough for medicine"), which significantly impaired their motivation to learn.

Teachers need to be judicious about the amount and type of material that they teach related to their specific audience. If teachers in medicine want to support high perceived learner

competence, they must focus on a developmental progression of the amount and type of information taught through the spectrum of pre-clerkship, to clerkship, to junior residency, and finally, senior residency.

Information overload and relevance intersect with the issue of content management. One of the key determinants for managing content and information overload involves teachers closely examining the relevance of the material being taught for the level of the learner. As Harden and Davis (1995) discussed, many stakeholders, including students, are involved in the decision-making process related to content management and determination of relevance. Although students may not be a position to determine relevance from a professional and curricular perspective, they are able to provide a rich source of information from a motivational perspective. Medical teachers would do well to continue to explore the medical student motivational perspective particularly related to content relevance and management, because of their significant influence on the basic psychological needs for learner self-determination. Effective management of curriculum content aligns with the concept of optimal challenge as a means of supporting learner perceived competence (Deci & Ryan, 1985a). A curriculum that provides a developmental progression of content with a manageable volume of material creates an optimally challenging learning environment where students experience greater perceived competence and, consequently, greater self-determination.

Appropriate content management coupled with adequate amounts of reasonably structured independent learning time supports learner self-determination through greater perceived competence and greater autonomy support, respectively. Appropriate content management also supports deeper learning, learner self-esteem, and learner well-being (Ryan & Deci, 2000b).

Learner engagement. Consistent with self-determination theory, the students in this study wanted to be active agents in their learning. These students not only wanted choice in how they learned and approached learning, but they also wanted to be active participants in their learning. Researchers have shown the cognitive benefits of active learning in terms of learning and memory (Prince, 2004; Michael, 2006). Active learning also provides a number of important motivational benefits by supporting learners' basic psychological needs. By engaging learners in the learning process, passing some of the control to learners, emphasizing the relevance of the content through the activity, and stimulating interest in the subject, teachers support learners' autonomy. By providing learners with opportunities to practice their knowledge and then to receive feedback, learners build confidence in their understanding of the material being taught, which supports their feeling of competence. By building a community of learners inside the classroom through learner-learner and learner-teacher interaction, teachers support learners' relatedness. The way in which teachers deliver content to learners impacts learners' motivational state and their cognitive frameworks (Ryan & Powelson, 1991). Therefore, teachers who establish learning environments where learners are actively engaged support motivation and learning.

The hidden curriculum and pimping. During the café discussions among the clinical clerks, they noted that hidden curricular issues were still present particularly related to hierarchy in medicine and inappropriate treatment of learners. Clinical clerks often perceived excessive judgment by preceptors. They believed that they were unable to provide input, suggestions, or deal with conflict for fear of inappropriate repercussions. These student experiences suggest that improvements in the teacher-learner hierarchical relationship need to occur, and physician preceptors need to understand the psychological impact that these "power-over" actions have on

learner autonomy, competence, and relatedness, in particular, but also on learner self-esteem and well-being (Lempp & Seale, 2004). Student encounters of the hidden curriculum can have a significant negative influence on the establishment and maintenance of trust between student and preceptor, which, from a self-determination perspective, is an essential element of relatedness.

Preceptors need to understand that learner *perceptions* of mistreatment or hierarchy are just as powerful as overt incidents in the context of learner motivation. Therefore, teachers or preceptors who overtly employ intimidation or humiliation techniques should reflect on the negative impact that these techniques have on students, and all preceptors should attempt to address potential learner perceptions of intimidation and hierarchy throughout their interactions with learners.

Pimping was the most commonly noted and impactful form of intimidation and humiliation used by preceptors that significantly hindered self-determination in clinical clerks who experienced it. Pimping prevented relatedness because learners felt alienated, with no sense of belonging or trust. Pimping hindered learners' perceived competence by causing learners to believe that they did not possess adequate knowledge and were incapable of learning. Further, pimping hindered autonomy because learners felt that they were not part of the learning process and that their preceptors were exerting control over them and forcing them to engage in an activity in which they did not want to engage. Not only does pimping impact student self-determination and learning, but it also has a significant impact on learner self-esteem and well-being (Haidet & Stein, 2006).

The medical students in my study noted that they wanted to be asked questions and to be challenged in their learning; however, they wanted it to be done in a positive, encouraging, and supportive environment as opposed to one of judgment and interrogation. To support self-

determination through support of the three basic psychological needs, medical teachers must seek to provide an optimally challenging learning environment for their learners, while at the same time creating a trusting and open environment where medical students perceive that their perspectives and input are acknowledged and valued (Haidet & Stein, 2006; Lempp & Seale, 2004; Ryan & Deci, 1985a).

Feedback. According to the findings of this study, medical teachers need to continue to build their knowledge and skills related to providing effective and constructive feedback to learners. This finding is consistent with the self-determination literature. Effective feedback by teachers provides the necessary information to learners to gauge their knowledge and skill development and to achieve their maximum potential (Ramani & Krackov, 2012). Feedback is an essential element in supporting learners' perceived competence (i.e., the perception within learners that they are capable of achieving a desired goal or outcome; Williams, 2002).

Teachers can provide effective feedback in a number of ways, including: (a) creating a respectful learning environment, which facilitates delivery and receipt of feedback; (b) establishing clear goals and objectives, which should be negotiated between learners and teachers; (c) centering feedback on directly observed incidents; (d) providing timely, formative, specific, and non-judgmental feedback directed to the performance, not the person; (e) reinforcing positive elements and addressing negative or incorrect behaviours; (f) ensuring learners understand and endorse the feedback; and (g) facilitating reflection and formation of an action plan with learners (Ramani & Krackov, 2012).

Carpentier and Mageau (2013) also emphasized the importance of providing autonomy-supportive feedback as opposed to controlling forms of feedback as a means of enabling greater endorsement of the feedback by learners. Autonomy supportive feedback involves: (a) providing

a rationale for why a behaviour should change; (b) acknowledging the learners' perspectives in the feedback process; (c) providing options for change and allowing learners to choose; and (d) avoiding controlling communication such as shame, intimidation, or threats. Creating a feedback environment that is positive, autonomy-supportive, and builds on learners' perceived competence contributes to an internal perceived locus of causality, greater perceived competence, and therefore greater self-determination.

Practice and application. Practice and application are important educational activities that support learner perceived competence. Application also contributes to learner autonomy such that students realize the importance and relevance of the information being taught because the information is contextualized, which supports internalization and greater autonomous motivation. Students in this study expressed a strong desire for opportunities to practice the content and skills that they learned, especially in the early stages of their education (e.g., pre-clerkship). The demand for more practice and application in the early stages of medical school likely originated from the fact that the focus in the first two years of medical school was on medical knowledge building; whereas, in the clerkship stage of medical school, students were working and applying their knowledge in the clinical setting on a daily basis.

Teachers who create opportunities for students to practice and apply their knowledge also create the ideal circumstances for providing feedback, another essential element in fostering learner perceived competence. Feedback is an essential component of deliberate practice and supports learning and skill development that is more robust (Ericsson, Krampe, & Tesch-Romer, 1993). Deliberate practice is more advantageous than simple practice, because it fosters learner growth and development through conscious awareness of strengths and areas of needed improvement. When one practices a skill or works through problems with little feedback or

guidance, development and improvement in that skill is less likely to follow (Ericsson et al., 1993). An individual may actually regress in a skill if they continuously practice that skill incorrectly (Brydges, Dubrowski, & Regher, 2010). Therefore, provision of practice and feedback by teachers is essential to support learner perceived competence.

Teachers who do not provide opportunities for learner engagement or application of knowledge hinder learner motivation because: (a) students do not know what or how the content is important, which affects autonomy; (b) students do not know how to use the information in meaningful and variable contexts, which affects their perceived competence; and, (c) students do not receive feedback, and therefore have little knowledge of their progression, which also impacts perceived competence.

Practice implies performing the same or similar actions repeatedly, or encountering similar situations repeatedly. One cannot assume that working through one case or clinical problem adequately prepares students to manage all cases related to that clinical problem and its many nuances. Students need to practice their knowledge and skills repeatedly and in several contexts. Therefore, medical teachers and medical curriculum decision-makers need to create opportunities for practice and feedback to support perceived competence as an essential element of learner self-determination.

Relatedness. One cannot underestimate the power of relatedness as a source of learner self-determination. The students in this study clearly indicated that the quality of relationships that they experienced with their teachers affected their motivation to engage and learn. In some situations, relatedness experiences between students and teachers were powerful enough to impact career decisions; where negative relatedness experiences generated disinterest in an area of medicine, and vice versa. I note that if such important career decisions were based on one

negative interaction, then that student did not likely possess a genuine interest in that area of medicine. However, the effect the relatedness had on career goals still speaks to the important role of relatedness in an individual's motivational construct.

Teachers who establish effective positive working relationships with their students create within the learner the motivational desire to learn and engage whole-heartedly in the learning process. The students noted that teachers establish relatedness by: (a) demonstrating their enthusiasm and passion for the subject they teach; (b) demonstrating that they care about the well-being and success of their students, and taking the time to help; (c) acknowledging learner perspectives, finding common ground, and taking interest in learners' goals; (d) getting to know learners personally; (e) showing respect, humanity, humility, and empathy; and, (f) using humour or having a sense of humour when interacting with students.

Implications for Theory and Revisit of Conceptual Framework

In this section, I discuss the theoretical implications of my research for self-determination theory and medical education and how the findings from my research provide a meaningful contribution to self-determination theory and medical education. I also provide two significant reconceptualizations of my conceptual framework presented in Chapter 2.

Self-determination theory has been researched extensively as a theoretical construct for education and learner motivation. Most of the research into self-determination has employed quantitative methods using theoretically and statistically validated tools to determine the relationship or influence of the three basic psychological needs on specific outcome variables. In the area of education, the outcome variables include academic achievement, learner well-being, and pro-social values. In medical education, specifically, outcome variables have included learner endorsement of biopsychosocial values, use of greater autonomy-supportiveness by

medical students when interacting with patients, and academic achievement (Williams & Deci, 1996; Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013). The rigorous practical and laboratory research is one of the strengths of self-determination theory.

There are fewer research studies using qualitative methods to explore self-determination theory. However, qualitative research may help to provide deeper insights and understanding of the participant experience and a supportive context to a participant's responses to quantitative investigation (Denzin & Lincoln, 2000). Few qualitative studies, which up to the time of my study had not to my knowledge been reported in the literature, have explored the medical student experience related to self-determination theory, including their perspectives on the teacher actions, curricular elements, and pedagogical approaches that support or hinder their self-determination. Sagasser, Kramer, and van der Vleuten (2012) qualitatively explored medical residents self-regulation experiences during residency and subsequently used self-determination theory to explain their findings, but their research purpose or questions did not initially employ self-determination theory as a theoretical framework.

The preliminary findings of my research study served as a confirmation of previous research findings for self-determination theory in the area of education. Moreover, my research provided the learners' perspective of supportive and hindering elements of self-determination in their medical education, which to my knowledge has never been explored before. Motivation means, "to be moved to do something" (Ryan & Deci, 2000a, p. 54). Self-determined motivation is a personal construct, derived from within the individual even if it can be influenced externally; therefore, learner perspectives about the elements that support or hinder self-determination becomes increasingly important.

Kirschner and van Merriënboer (2013) argued that many instances exist where learners may not know what is best to support their learning. This could also be true for motivation, where one might place certain internal desires above the basic needs of autonomy, competence, and relatedness, which may be detrimental to learning and well-being (Ryan & Deci, 2002). Therefore, consistently linking learner motivational perspectives back to the three basic psychological needs is essential in order to guide decisions about teaching practices. If student motivational perspectives are consistent with these needs, then teachers should acknowledge them as appropriate and find ways to support them.

Conceptual Framework Revisited

In developing my conceptual framework for my research, I focused heavily on the importance of teaching methods and content management in supporting learner self-determination. Although the methods that teachers employ are important for supporting learner self-determination, specifically the basic psychological needs of autonomy, competence, and relatedness I feel that my original conceptual framework was overly teacher-centred. The students in this study were less focused on the *methods* that teachers used to support their basic psychological needs. When the students reflected on and discussed their perspectives on what supported or hindered their self-determination in this study, they were more interested in and affected by specific teacher *actions* and general curricular structures, than they were on teachers' instructional methods (see Figure 5.1).

For example, for autonomy-supportiveness, the students occasionally mentioned that they appreciated the flipped lecture method as a means of autonomy-supportiveness. More often, they expressed appreciation for teachers who: (a) offered choice in how students could direct and time their learning, (b) demonstrated the relevance of a topic through clinical application, (c)

actively engaged learners, and (d) provided guidance and support by using clear objectives to support independent learning and facilitating in-class application activities. These specific teacher actions are advantages of the flipped lecture approach, but when presented as teacher actions instead of focusing on the method, they more accurately reflected the student perspective. Furthermore, when presented as specific teacher actions, they provide a more principled approach to teaching, which serves as a more concrete motivational guide for teachers. Regardless of the method that teachers use, they must examine and apply these specific motivational principles to support learner self-determination, and avoid those actions that hinder learner self-determination.

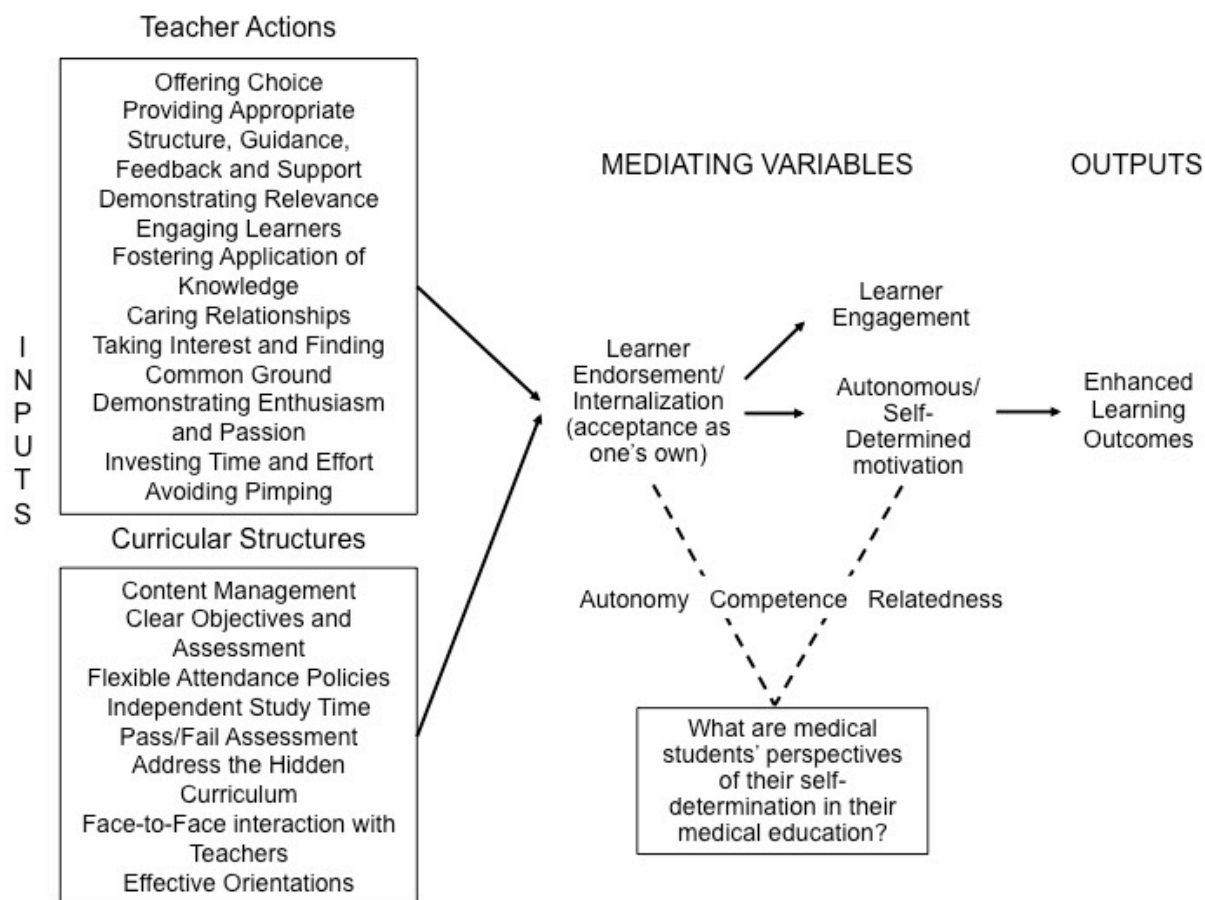


Figure 5.1 Modified conceptual framework. The findings of my research study suggested that my framework needed to shift away from a teacher-centred model to a learner-centred model,

where specific teacher actions and curricular structures – as offered by students and supported by principles of self-determination theory – supported learners’ three basic psychological needs and, therefore their self-determination.

Continuing with the example of the flipped classroom, most descriptions in the literature of the flipped classroom method discuss the basic philosophy behind the method and the basic organizational framework for how to effectively carry out the method. Although the basic framework of the flipped classroom inherently supports some aspects of the basic psychological needs, my research highlighted that the students needed more targeted action by their teachers to fully support self-determination, including: (a) flexibility of time allocation, (b) demonstration of relevance of the topic, (c) clear objectives and guidance for the breadth and depth of knowledge required; (d) opportunities for guidance and reassurance of understanding through specific and constructive feedback, (e) a caring and supportive relationship with the teacher, and (f) teacher enthusiasm. These principles, revealed by the students, provide teachers with a rich understanding of learners’ basic psychological needs. These teacher-action principles are applicable to any teaching method in any context and they provide a foundational understanding about how an intervention such as the flipped classroom supports self-determination.

My research also revealed a number of curricular policies and structures that supported learner self-determination that I originally did not consider in my conceptual framework. Examples of curricular policies or structures that supported self-determination included: (a) pass/fail assessment and promotion policies; (b) non-mandatory lecture attendance policies; (c) guided self-study time; (d) clear course objectives; (e) opportunities for face-to-face interaction with teachers, which addressed videoconferencing issues for Regina students; and (f) effective course and rotation orientations. Similar to the discussion of teacher-action principles, effective

implementation of these curricular structures support learners' basic needs for autonomy, competence, and relatedness.

Implications for Further Research and Methodological Considerations

This exploration of medical students' perspectives of their self-determination during medical school has provided me with a clearer understanding of medical students' basic needs that support their motivation to learn. With a better understanding of students' basic motivational needs more questions arose for further exploration, which I present in this section. Because the World Café conversational process was a novel approach for collecting the research data, I first reflect on the use of the World Café method as rigorous and dependable approach to qualitative research.

The World Café as a Dependable Method

Brown and Isaacs (2005) developed the World Café conversational process, informed by Brown's experiences with social activism and community engagement. The principles that guide appreciative inquiry also influenced the World Café process. World Café processes have primarily been used in business and politics to support the generation of ideas based on conversations around questions that matter to the people involved. The World Café process has only recently been used as a research method (Fouché & Light, 2011; Stockigt & Witt, 2013). Because the application of the World Café method is new to qualitative research, I discuss its trustworthiness based on Lincoln and Guba's (1985) framework for trustworthiness of qualitative research, focusing on credibility.

Credibility in qualitative research refers to the ability of the research to accurately represent the experiences and perspectives of the participants (Lincoln & Guba, 1985). My approach to the World Café had the participants conversing and recording their ideas as the

conversation progressed, therefore, the data originated directly from the participants in the participants' own words. The relaxed and "home-like" environment supported open and uninhibited dialogue from participants. Because the conversations occurred only among peer groups (i.e., not directed by an interviewer or facilitator), the participants were able to freely discuss potentially sensitive matters without concern of judgment from the facilitator. From the moment I invited them to begin, the participants appeared to engage whole-heartedly and without reservation. Observing from a distance, I noted that all participants were actively involved in the process. Some participants were writing more than talking, but everyone in the café group contributed to the discussion. At the end of each session, I engaged the entire participant group in a discussion of the session topic. The participants were asked to represent their café tables' discussion points, which facilitated further generation and clarification of ideas, but also served as an affirmation that participants generally agreed with what the points of discussion at individual tables.

There were two limitations to credibility related to the World Cafe process. First, some of the details of the conversations were not written down because there was no facilitator formally directing the proceedings. Perhaps the engagement in the conversation distracted individuals from writing something down, or they may have had difficulty translating their thoughts into words such that some ideas may have not been recorded. Second, because there was no facilitator present, some of the comments that were recorded were written in a simplified, point-form format; therefore some of the context and richness of the ideas were not recorded. Participants did not record their names beside their comments so it was not possible for me to go back to that person to clarify their idea. The majority of comments were understandable because

I reminded the participants often throughout the event to write down their ideas and to make sure that I would be able to understand the intention behind their comments.

The World Café process is a credible and helpful method for gathering people together to talk about important issues and for researchers to develop an understanding of the issues and ideas that matter to individuals. Facilitating movement of participants across groups reduces monotony, fosters lively, but focused discussion, and generates effective “cross-pollination” of ideas (Brown & Isaacs, 2005). The World Café method is an effective option for researchers who wish to engage large groups, but wish to employ other approaches beyond focus groups.

Opportunities for Further Research

The findings of my study provided practical insights into medical student self-determination. With these research findings, new opportunities for further research have surfaced. First, the findings from the quantitative investigation of general causality orientations of the medical student participants suggested that there might be a difference in causality orientations across years. However, because this study was a cohort analysis, claims about change in causality orientation over time were not possible to make. Future research could involve performing a longitudinal investigation into individual changes in general causality orientation and other self-determination parameters throughout the undergraduate medical education experience.

The results from the SRQ-L revealed a trend toward lower scores for relative autonomy in progressive years in the program. Research has also shown that empathy decreases consistently as medical students progress through the medical program (Neumann, et al. 2011). The factors that affect a decline in empathy are similar to the factors that hinder learner autonomy, which include: (a) mistreatment by superiors through harassment, humiliation, and

discrimination; (b) innate learner vulnerability due to idealism and enthusiasm, which diminish due to the challenging realities faced in clinical practice; (c) lack of support systems; and (d) heavy workload with lack of sleep and personal time (p. 998). The students in my study indicated that they experienced at least some of these factors during their medical education. Thus, another area of future research could involve investigating the potential relationship between, or the influence of autonomy-supportiveness and hindrance on empathy in medical students.

Throughout the discussion of autonomy in my research, the students consistently noted that they would like to have more choice in how they approached learning. The students also noted a range of autonomy-supportive and hindering experiences with various teachers. Consistent with the World Café findings, the results from the LCQ revealed that students were somewhat neutral in their ratings of the autonomy-supportiveness of their teachers, the most likely explanation being that the students experienced a full range of autonomy supportive and hindering teachers, which statistically created a regression to the mean.

Further research could investigate medical teachers' perspectives of the degree to which they feel they are autonomy-supportive versus controlling with learners. The Motivators Orientation Questionnaire assesses this element in teachers. Once this is understood, it could also be interesting to gather faculty and medical students together to discuss autonomy-supporting and controlling teacher behaviours. The World Café process is strategically designed to facilitate conversations between various stakeholders (Brown & Isaacs, 2005), so this may be an opportunity to establish a common understanding of the factors that support and hinder learner autonomy and a common vision for how to support autonomy more effectively in the future.

The students in the current study also highlighted the importance of a teacher's desire to teach and how this affected their motivation to learn. Roth, Assor, Kanat-Maymon, and Kaplan (2007) found in a study of elementary school teachers' motivation to teach, that autonomous motivation to teach was associated with learner autonomous motivation to learn. An area of further research could involve investigation of clinicians' motivation for teaching to determine whether it is more autonomous or control oriented, to determine what impact it has on their well-being, and to determine if an association exists with medical students' perceptions about the autonomy-supportiveness of their teachers.

The students in this study believed that a structured form of autonomy was ideal to allow choice in their learning, yet provide guidance, support, and feedback along the way to support perceived confidence that they were meeting the program objectives and their own goals of becoming good physicians. Jang, Reeve, and Deci (2010) performed an observational study that investigated the relationship between high school instructor autonomy-supportiveness and structure provision, and learner engagement. They found that autonomy-supportiveness was associated with both objective and subjective types of engagement and that structure influenced only objective forms of engagement. Objective engagement referred to outward signs of engagement such as on-task behaviour, effort, and persistence; and subjective engagement included inward signs of engagement such as enjoyment, desire to contribute, and learn (p. 596). A similar study involving medical students, various medical teachers, and teaching contexts might help to determine optimal learner engagement.

Another opportunity for further research could involve an exploration of medical teachers' self-determined motivation toward teaching medical students. A tension exists between the demand for clinical responsibilities, teaching and research, and achieving a balance

between post-graduate medical teaching and programming and undergraduate medical teaching. With all of these factors in play, it could be important to explore the motivational factors that support and hinder the effective balance of all of these important activities.

Greater learner self-determination has been linked to greater well-being and improved learner outcomes (Ryan & Deci, 2000b). Further research could employ the Basic Psychological Needs Scale to investigate medical students' perceptions of the satisfaction of these needs and the relationship of these needs to their overall well-being during medical school and their academic performance.

Medical students unanimously agreed that pinging had a significant negative impact on self-determination, and that it affected all three basic psychological needs. Future research could compare negative questioning techniques (i.e., pinging) to positive questioning techniques on learner perceived autonomy-support, competence, and relatedness.

Medical students perceived that effective feedback was essential for their development as physicians and that positive constructive feedback that focused on supporting and encouraging learners was a significant source of motivation. Carpentier and Mageau (2013) investigated the effect of autonomy-supportive and controlling forms of negative feedback (called change-oriented feedback) by coaches on athletes' motivation and self-esteem. Further research could first investigate the type of feedback that preceptors provide to students, then specifically investigate change-oriented feedback to determine if that feedback is autonomy-supportive or controlling in orientation and determine the impact on learner motivation and self-esteem.

Students noted in the World Café that they related better to younger teachers. Future research could investigate if a relationship exists between teacher age and learner relatedness as well as learner perceived autonomy-supportiveness of younger teachers.

Concluding Comments

My research explored medical students' perceptions of self-determination during medical school. Data were collected using self-determination surveys and World Café conversational processes in two educational sites. Research in the area of self-determination has focused primarily on quantitative empirical studies, which has contributed to the rigour of the theory. However, qualitative research on learner perspectives of the teacher actions and curricular structures that support or hinder self-determination are limited, and up to the time of this study have not been investigated in the area of medical education. Qualitative studies can provide the rich context to develop a better understanding of the participants' experiences related to the theoretical construct being explored. The findings from this research were consistent with the self-determination theory literature and demonstrated that learners were able to appropriately assess their basic psychological needs to advocate for autonomy-, competence-, and relatedness-supportive teacher actions and curricular structures, and to identify those actions that hindered these basic needs.

At a practical level, the findings of my research demonstrated that specific teaching methods and strategies (e.g., flipped lectures or cooperative small group learning) impacted learners and affected their learning at a cognitive level; however, specific teacher actions (e.g., providing choice, giving effective feedback, and establishing relationships) and general curricular policies impacted learners at the affective level, and this affective dimension was the key element that supported self-determination.

My first research question asked, "what were medical students' perspectives of autonomy-supportiveness in their medical education program, and what was the impact on their learning?" My research themes revealed that learners desire to have teachers who provide

opportunities for learner autonomy in a guided and structured manner, demonstrate relevance of material, offer choice, acknowledge learner perspectives, create positive learning environments, and actively involve learners support learner autonomy and motivation to learn and engage.

Learners desire curricula with flexible but clear attendance policies and objectives, use pass/fail assessment policies in conjunction with structured independent learning allow students to autonomously organize and plan their learning. In distributed learning contexts, learners want teachers to find opportunities for face-to-face interaction between learner and teacher supports autonomy.

My second research question asked, “what were medical students’ perspectives of competence-supportiveness in their medical education program, and what was the impact on their learning?” My research themes revealed that learners desire to have teachers who are able to manage their content, provide effective feedback, engage learners in deliberate practice and application, and provide positive support and guidance. These teacher actions create a learning context that supports positive learner perceived competence. Learners emphasized the negative impact that intimidating learning environments, especially pimping, had on their perceived competence, and therefore their self-determination.

My third research question asked, “what were medical students’ perspectives of relatedness with their teachers, and what was the impact on their learning?” My research themes revealed that learners desire to have teachers who show that they care about their learners; take interest and support learners academically and personally; and demonstrate enthusiasm, empathy, humanity, and humility in their teaching establish a positive relationship with learners. This connectedness between learner and teacher establishes the ideal conditions for learners to engage and to experience greater self-determination.

A targeted approach to supporting learners' basic psychological needs through appropriate teacher and curricular action provides the necessary elements for a more autonomous, self-determined motivation in learners. Strategies in medical education have often focused on the methods and approaches that teachers should use to maximize learning, particularly from a cognitive perspective. However, these teaching methods lose their effectiveness if teachers do not first create the appropriate motivational context that generates the willingness within the learner to want to engage and learn. This research provided insights from the learner perspective to help teachers intentionally create the motivational context to support learner self-determination, to maximize learning, and to support learner well-being.

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APPENDIX A: General Causality Orientations Scale

The General Causality Orientations Scale (GCOS)

The Scale (17-vignette version)

On these pages you will find a series of vignettes. Each one describes an incident and lists three ways of responding to it. Please read each vignette and then consider the responses in turn. Think of each response option in terms of how likely it is that you would respond in that way. We all respond in a variety of ways to situations, and probably each response is at least slightly likely for you. If it is very unlikely that you would respond in the way described in a given response, you would select numbers 1 or 2. If it is moderately likely, you would respond in the midrange of numbers; and if it is very likely that you would respond as described, you would select the 6 or 7. Please select one number for each of the three responses on the answer sheet for each vignette. The actual items begin on the next page.

1. You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is:

a) What if I can't live up to the new responsibility?

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Will I make more at this position?

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) I wonder if the new work will be interesting.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

2. **You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think:**

a) It's not what you know, but who you know.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) I'm probably not good enough for the job.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Somehow they didn't see my qualifications as matching their needs.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

3. **You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who cannot all break at once. You would likely handle this by:**

a) Telling the three workers the situation and having them work with you on the schedule.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Simply assigning times that each can break to avoid any problems.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Find out from someone in authority what to do or do what was done in the past.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

4. **You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:**

a) "I can't do anything right," and feel sad.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) "I wonder how it is I did so poorly," and feel disappointed.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) "That stupid test doesn't show anything," and feel angry.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

5. **When you and your friend are making plans for Saturday evening, it is likely that you would:**

a) Leave it up to your friend; he (she) probably wouldn't want to do what you'd suggest.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Each make suggestions and then decide together on something that you both feel like doing.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Talk your friend into doing what you want to do.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

6. You have been invited to a large party where you know very few people. As you look forward to the evening, you would likely expect that:

a) You'll try to fit in with whatever is happening in order to have a good time and not look bad.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) You'll find some people with whom you can relate.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) You'll probably feel somewhat isolated and unnoticed.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

7. You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as:

a) Take charge: that is, you would make most of the major decisions yourself.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Follow precedent: you're not really up to the task so you'd do it the way it's been done before.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Seek participation: get inputs from others who want to make them before you make the final plans.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

8. Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you're likely to think:

a) You didn't really expect the job; you frequently get passed over.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) The other person probably "did the right things" politically to get the job.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) You would probably take a look at factors in your own performance that led you to be passed over.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

9 You are embarking on a new career. The most important consideration is likely to be:

a) Whether you can do the work without getting in over your head.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) How interested you are in that kind of work.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Whether there are good possibilities for advancement.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

10. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:

a) Tell her that her work is below what is expected and that she should start working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Ask her about the problem and let her know you are available to help work it out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) It's hard to know what to do to get her straightened out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

11. Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:

a) Feel interested in the new challenge and a little nervous at the same time.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Feel excited about the higher status and salary that is involved.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Feel stressed and anxious about the upcoming changes.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

12. Within your circle of friends, the one with whom you choose to spend the most time is:

a) The one with whom you spend the most time exchanging ideas and feelings.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) The one who is the most popular of them.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) The one who needs you the most as a friend.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

13. You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:

a) Talk it over with your daughter to understand further what the problem is.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Scold her and hope she does better.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Make sure she does the assignments, because she should be working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

14. Your friend has a habit that annoys you to the point of making you angry. It is likely that you would:

a) Point it out each time you notice it, that way maybe he(she) will stop doing it.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Try to ignore the habit because talking about it won't do any good anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Try to understand why your partner does it and why it is so upsetting for you.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

15. A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:

a) Share your observations with him/her and try to find out what is going on for him/her.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Ignore it because there's not much you can do about it anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Tell him/her that you're willing to spend time together if and only if he/she makes more effort to control him/herself.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

16. Your friend's younger sister is a freshman in college. Your friend tells you that she has been doing badly and asks you what he (she) should do about it. You advise him (her) to:

a) Talk it over with her and try to see what is going on for her.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Not mention it; there's nothing he (she) could do about it anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Tell her it's important for her to do well, so she should be working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

17. You feel that your friend is being inconsiderate. You would probably:

a) Find an opportunity to explain why it bothers you; he (she) may not even realize how much it is bothering you.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Say nothing; if your friend really cares about you he (she) would understand how you feel.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Demand that your friend start being more considerate; otherwise you'll respond in kind.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

Name or Code: _____

Sex: M F (circle one)

Date: _____

GCOS Response Form - 17 Vignettes

1. a _____
b _____
c _____

2. a _____
b _____
c _____

3. a _____
b _____
c _____

4. a _____
b _____
c _____

5. a _____
b _____
c _____

6. a _____
b _____
c _____

7. a _____
b _____
c _____

8. a _____
b _____
c _____

9. a _____
b _____
c _____

10. a _____
b _____
c _____

11. a _____
b _____
c _____

12. a _____
b _____
c _____

13. a _____
b _____
c _____

14. a _____
b _____
c _____

15. a _____
b _____
c _____

16. a _____
b _____
c _____

17. a _____
b _____
c _____

Name or Code: KEY

Sex: M F (circle one)

Date: _____

GCOS Response Form - 17 Vignettes

1. a I
 b C
 c A

2. a C
 b I
 c A

3. a A
 b C
 c I

4. a I
 b A
 c C

5. a I
 b A
 c C

6. a C
 b A
 c I

7. a C
 b I
 c A

8. a I
 b C
 c A

9. a I
 b A
 c C

10. a C
 b A
 c I

11. a A
 b C
 c I

12. a A
 b C
 c I

13. a A
 b I
 c C

14. a C
 b I
 c A

15. a A
 b I
 c C

16. a A
 b I
 c C

17. a A
 b I
 c C

KEY: A = Autonomy

C = Control

I = Impersonal

APPENDIX B: Learning Climate Questionnaire

Perceived Autonomy Support: The Climate Questionnaires

The Learning Climate Questionnaire (LCQ)

The LCQ has a long form containing 15 items and a short form containing 6 of the items. The questionnaire is typically used with respect to specific learning settings, such as a particular class, at the college or graduate school level. Thus, the questions are sometimes adapted slightly, at least in the instructions, so the wording pertains to the particular situation being studied--an organic chemistry class, for example. In these cases, the questions pertain to the autonomy support of an individual instructor, preceptor, or professor. If, however, it is being used to assess a general learning climate in which each student has several instructors, the questions are stated with respect to the autonomy support of the faculty members in general. Below, you will find the 15-item version of the questionnaire, worded in terms of "my instructor." If you would like to use the 6-item version, simply reconstitute the questionnaire using only items # 1, 2, 4, 7, 10, and 14.

Scoring: Scores on both the 15-item version and the 6-item version are calculated by averaging the individual item scores. However, for the long version, before averaging the item scores, you must first "reverse" the score of item 13 (i.e., subtract the score on item 13 from 8 and use the result as the item score for this item--for example, the score of 3, when reversed would become 5). Higher average scores represent a higher level of perceived autonomy support.

Learning Climate Questionnaire

This questionnaire contains items that are related to your experience with your instructor in this class. Instructors have different styles in dealing with students, and we would like to know more about how you have felt about your encounters with your instructor. Your responses are confidential. Please be honest and candid.

1. I feel that my instructor provides me choices and options.

1	2	3	4	5	6	7
strongly disagree			neutral			strongly agree

2. I feel understood by my instructor.

1	2	3	4	5	6	7
strongly disagree			neutral			strongly agree

3. I am able to be open with my instructor during class.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

4. My instructor conveyed confidence in my ability to do well in the course.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

5. I feel that my instructor accepts me.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

6. My instructor made sure I really understood the goals of the course and what I need to do.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

7. My instructor encouraged me to ask questions.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

8. I feel a lot of trust in my instructor.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

9. My instructor answers my questions fully and carefully.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

10. My instructor listens to how I would like to do things.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

11. My instructor handles people's emotions very well.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

12. I feel that my instructor cares about me as a person.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

13. I don't feel very good about the way my instructor talks to me.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

14. My instructor tries to understand how I see things before suggesting a new way to do things.

1	2	3	4	5	6	7
strongly			neutral			strongly
disagree						agree

15. I feel able to share my feelings with my instructor.

1	2	3	4	5	6	7
strongly			neutral			strongly

APPENDIX C: Learning Self-Regulation Questionnaire

The Self-Regulation Questionnaires

Learning Self-Regulation Questionnaire (SRQ-L)

This questionnaire concerns the reasons why people learn in particular settings such as a college or medical school course. Whereas the Academic Self-Regulation Questionnaire is for use with children, the Learning Self-Regulation Questionnaire is for older students. It asks three questions about why people engage in learning-related behaviors. This questionnaire was formed with just two subscales: Controlled Regulation and Autonomous Regulation. Thus, the responses that are provided are either controlled (i.e., external or introjected regulation) or autonomous (identified regulation or intrinsic motivation). Because the scale was designed to have just the two “super” categories of regulation, there was no attempt to have the same number of items from each regulatory style (e.g., identified and intrinsic), and there was no psychometric work done on the individual regulatory styles. The validation was done only at the level of the two “super” categories.

The Scale

Learning Questionnaire

The following questions relate to your reasons for participating in the interviewing class. Different people have different reasons for participating in such a class, and we want to know how true each of these reasons is for you. There are three groups of items, and those in each group pertain to the sentence that begins that group.

Please indicate how true each reason is for you using the following scale:

1	2	3	4	5	6	7
not at all		somewhat			very	
true		true			true	

A. I will participate actively in my classes:

1. Because I feel like it's a good way to improve my understanding of the material.
2. Because others would think badly of me if I didn't.
3. Because I would feel proud of myself if I did well in the course.
4. Because a solid understanding of my course material is important to my intellectual growth.

B. I am likely to follow my instructors' suggestions for studying in my various courses:

5. Because I would get a good grade if I do what they suggest.

6. Because I believe my instructor's suggestions will help me learn effectively.
7. Because I want others to think that I am a good student.
8. Because it's easier to follow their suggestions than come up with my own study strategies.
9. Because it's important to me to do well at this.
10. Because I would probably feel guilty if I didn't comply with my instructor's suggestions.

C. The reason that I will work to expand my knowledge in medicine is:

11. Because it's interesting to learn more about medicine.
12. Because it's a challenge to really understand how to solve medical problems.
13. Because a good grade in my courses will look positive on my record.
14. Because I want others to see that I am intelligent.

Scoring information for this SRQ-L (Medicine)

Begin by calculating the two subscale scores by averaging the items on that subscale. They are:

Autonomous Regulation: 1, 4, 6, 9, 11, 12,

Controlled Regulation: 2, 3, 5, 7, 8, 10, 13, 14

In past studies, the alpha reliabilities for these two subscales have been approximately 0.75 for controlled regulation and 0.80 for autonomous regulation. Analyses can be done with the two separate subscales, or a Relative Autonomy Index can be formed by subtracting the controlled subscale score from the autonomous subscale score.

APPENDIX D: Ethics Application



Application for Behavioural Research Ethics Review

Evaluating Applications

The matters of greatest concern to the Behavioural Research Ethics Board (Beh-REB) are the issues of informed consent of participants, voluntary participation, protection of individual privacy (confidentiality and anonymity), and safeguarding participants from any harmful results due to participation or non-participation in the proposed investigation or research project. Our evaluation of an application is based on the degree to which each of these concerns are satisfied; when filling out the application, researchers are urged to consider these points, and to explain to the Beh-REB the steps they will take to address the concerns. Researchers are also urged to consult the [Tri-Council Policy Statement 2](#) for more information and guidance.

The Beh-REB acknowledges the variety of paradigms and methodologies currently available to researchers, and that each of these paradigms entails its own particular ethical issues. Thus, there may be more than one way to address an ethical issue. Researchers should feel free to suggest alternative approaches or to explain why a particular requirement is not appropriate in the context of a given project.

****All text boxes will expand once <Enter> is selected or the cursor moves to the next section.****

PART 1: IDENTIFICATION											
1.1	Project Title GN 1.1 Self-Determination in Medical School: Medical Students' Perspectives										
1.2	Principal Investigator GN 1.2 Full Name: Keith Walker Mailing Address: Education Building 28 Campus Dr., Saskatoon, SK. S7N 0X1 Email: keith.walker@usask.ca Phone: 306-655-4208 NSID number (U of S faculty only):										
1.3	University/Institutional Affiliation of Principal Investigator GN 1.3 Position: Professor Department: Educational Administration Division: College of Education										
1.4	If this is a student/graduate/resident project, please provide the following information: GN 1.4 a) Student Name(s) and Student ID or NSID (s): Greg Malin - grm831 b) Supervisor Name: Keith Walker										
1.5	Project Personnel (include graduates/post graduates/residents): GN 1.5 <div style="float: right;"> <input type="button" value="Add Personnel"/> <input type="button" value="Remove Last"/> </div> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Full Name: Greg Malin</td> <td style="width: 50%;">Full Name: Keith Walker</td> </tr> <tr> <td>Project Position/Role: Doctoral Candidate</td> <td>Project Position/Role: Supervisor</td> </tr> <tr> <td>University/Institutional Affiliation: University of Saskatchewan</td> <td>University/Institutional Affiliation: University of Saskatchewan</td> </tr> <tr> <td>Email: greg.malin@usask.ca Phone: 306-655-4208</td> <td>Email: keith.walker@usask.c Phone: 306-966-7623</td> </tr> </table>			Full Name: Greg Malin	Full Name: Keith Walker	Project Position/Role: Doctoral Candidate	Project Position/Role: Supervisor	University/Institutional Affiliation: University of Saskatchewan	University/Institutional Affiliation: University of Saskatchewan	Email: greg.malin@usask.ca Phone: 306-655-4208	Email: keith.walker@usask.c Phone: 306-966-7623
Full Name: Greg Malin	Full Name: Keith Walker										
Project Position/Role: Doctoral Candidate	Project Position/Role: Supervisor										
University/Institutional Affiliation: University of Saskatchewan	University/Institutional Affiliation: University of Saskatchewan										
Email: greg.malin@usask.ca Phone: 306-655-4208	Email: keith.walker@usask.c Phone: 306-966-7623										
1.6	Primary Contact Person for Correspondence (if different than Section 1.2) GN 1.6 Full Name: Mailing Address:										

	Email: _____ Phone: _____
1.7	Research Site(s) where project will be carried out: University of Saskatchewan
1.8	1.8.1 Proposed Project Period: <u>GN 1.8</u> From (MM/DD/YY) 02/15/14 To (MM/DD/YY) 06/30/14
1.9	<p>1.9.1 Has this project applied for and/or received ethical approval from any other Research Ethics Board? Will you be seeking REB approval through the Sask. ethics harmonization process? <u>GN 1.9</u></p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>1.9.2 Please be advised that approvals may need to be sought if you are collecting data from schools, within health regions and may be required from other organizations, agencies, or community groups. Will you be contacting potential participants or collecting data from any such organizations? <u>GN 1.9.2</u></p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
1.10	<p>1.10.1 Status of Funds: <u>GN 1.10</u> <input type="checkbox"/> Awarded <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Unfunded</p> <p>1.10.2 Provide name of funding source: _____</p> <p>1.10.3 Source of Funds: <input type="checkbox"/> Industry <input type="checkbox"/> National Institute of Health (NIH) <input type="checkbox"/> Tri-Council Grant <input type="checkbox"/> Cooperative Group (NCIC, COG, RTOG) <input type="checkbox"/> Not-for-Profit Foundation <input checked="" type="checkbox"/> Internally funded</p>
11.1	Name of Sponsor if different from above funding source: _____

PART 2: CONFLICT OF INTEREST

2.1	<p>2.1.1 Is there any real, potential or perceived conflict of interest (any personal or financial interest in the conduct or outcome of this project)? <u>GN 2.1</u></p> <p>2.1.2 Will any of the researcher(s), members of the research team and/or their immediate family members:</p> <ul style="list-style-type: none"> Receive personal benefits in connection with this project over and above the direct costs of conducting the project, such as remuneration or employment? Receive significant payments of other sorts from the sponsor such as grants, compensation in the form of equipment or supplies or retainers for ongoing consultation and honoraria? Have a non-financial relationship with a sponsor (such as unpaid consultant, board membership, advisor or other non-financial interest)? Have any direct involvement with the sponsor such as stock ownership, stock options or board membership. Hold patents, trademarks, copyrights, licensing agreements or intellectual property rights linked in any way to this project or the sponsor? Have any other relationship, financial or non-financial, that if not disclosed, could be construed as a conflict of interest? <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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PART 3: BRIEF OVERVIEW OF RESEARCH PROJECT

3.1	<p>Briefly describe the project, its objectives and potential significance (250-500 words): <u>GN 3.1</u></p> <p>Self-determination theory suggests that human beings are motivated by three psychological needs – autonomy, competence, and relatedness – which when satisfied, yield enhanced self-motivation and mental health and when prevented lead to reduced motivation and well-being. The theory proposes that motivation is a spectrum that ranges from amotivation to extrinsic motivation (with increasing degrees of autonomous regulation), to intrinsic motivation, which is the prototype of self-determined behaviour. This theory of motivation has implications and applications for education, and more specifically for the purposes of this research study, for medical education. If a learner's motivation is internally regulated (autonomous), they will have better engagement in learning, learning outcomes, and personal well-being. Medical students are often thought of as highly motivated individuals, however, the source of that motivation, external or internal, is not well understood. The purpose of this research is to explore medical students' perspectives of their self-determination in the medical education. The three tenets of self-determination will be examined individually by medical students who will provide their experiences and insights into the extent to which these three elements are present or absent in their learning environment. By understanding this, it has the potential to</p>
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	inform medical teachers about how to target their approaches to teaching in order to effectively motivate learners, and, ultimately, foster better learning.												
3.2	<p>Provide a description of research design and methods to be used: GN 3.2</p> <p>This study is modeled after a participatory action research methodological framework. I am an assistant professor in the College of Medicine and the participants are students that I have taught or currently teach. My purpose is to understand student perceptions of their experiences of self-determined motivation in their medical education and how this can then inform teaching practice around student motivation. The study has 2 phases. Phase 1 - Questionnaire - All medical students from across the four years of the medical program will be invited to complete a questionnaire (up to 370 students). The questionnaire will request demographic information (eg. age, gender, previous education/employment before medicine), and 3 validated questionnaires about personal self-determination parameters including: General Causality Orientation Scale; Learning Self-Regulation Scale; Learning Climate Scale. Participants will also be able to provide comments within the questionnaire. Phase 2 - World Cafe process. I will invite up to 100 medical student participants from across all four years to engage in this conversational process. It will be an all-day event (9:00am - 4:00pm) and broken down into 4 major discussion sessions addressing student perceptions of autonomy, competence, and relatedness in their medical education and one final session on ways to foster motivation building on the discussion points throughout the day. Participants begin in small groups of 4-5 for the first discussion point. Throughout the day, they will continually form new groups with each new topic of discussion, the purpose of which is to establish cross-pollination of ideas. Participants will be writing their thoughts/ideas on large sheets of paper at their table as an important source of documentation.</p>												
3.3	<p>Provide details regarding the duration and location of data collection event(s): GN 3.3</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Questionnaire</td> <td><input type="checkbox"/> Participant Observation</td> </tr> <tr> <td><input type="checkbox"/> Individual Interviews</td> <td><input checked="" type="checkbox"/> Focus Groups</td> </tr> <tr> <td><input type="checkbox"/> Group Interview</td> <td><input type="checkbox"/> Non-invasive physical measurements</td> </tr> <tr> <td><input type="checkbox"/> Video/audio recording</td> <td><input type="checkbox"/> Secondary use of data or analysis of existing data</td> </tr> <tr> <td><input type="checkbox"/> Home Visits</td> <td><input type="checkbox"/> Ethnography</td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other: Word Cafe conversational process (a modified group interview/focus group), also will engage two interpretation panels (which are a specific form of focus group for data analysis)</td> </tr> </table>	<input checked="" type="checkbox"/> Questionnaire	<input type="checkbox"/> Participant Observation	<input type="checkbox"/> Individual Interviews	<input checked="" type="checkbox"/> Focus Groups	<input type="checkbox"/> Group Interview	<input type="checkbox"/> Non-invasive physical measurements	<input type="checkbox"/> Video/audio recording	<input type="checkbox"/> Secondary use of data or analysis of existing data	<input type="checkbox"/> Home Visits	<input type="checkbox"/> Ethnography	<input checked="" type="checkbox"/> Other: Word Cafe conversational process (a modified group interview/focus group), also will engage two interpretation panels (which are a specific form of focus group for data analysis)	
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PART 4: PROJECT DETAILS	
4.1	<p>4.1.1 Will you have any internet-based interaction with participants? GN 4.1</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>4.1.2 If you are using a third party research tool, website survey software, transaction log tools, screen capturing software, or masked survey sites, how will you ensure the security of data gathered at that site?</p> <p>I will be using the U of S web survey software "Fluid Surveys" for the questionnaire portion of my study</p> <p>4.1.3 Describe how permission to use any third party owned site(s) will be obtained, if applicable:</p> <p>N/A</p> <p>4.1.4 How will you protect the privacy and confidentiality of participants who may be identified by email addresses, IP addresses, and other identifying information that may be captured by the system during your interactions with these participants?</p> <p>Participants who complete the survey will be deidentified and a code number will used.</p> <p>4.1.5 If you do not plan to identify yourself and your position as a researcher to the participants, from the onset of the research study, explain why you are not doing so, at what point you will disclose that you are a researcher, provide details of debriefing procedures, if any, and if participants will be given a way to opt out, if applicable:</p> <p>N/A</p>

4.2	<p>4.2.1 Will your research involve Aboriginal Peoples including First Nations, Inuit and Métis peoples? GN 4.2</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>4.2.2 Please outline the plans to obtain community engagement for this project. Describe the nature, and extent of the community engagement as determined jointly by the researcher and relevant community. If no community consent is being sought, please justify.</p> <p>Students of Aboriginal ancestry may be involved, however, this study is not focused on Aboriginal Peoples or communities.</p> <p>4.2.3 Describe any relevant customs and codes of research practice that apply to the particular community or communities affected by the research:</p> <p>N/A</p> <p>4.2.4 Will a research agreement between the researcher and community be prepared?</p> <p>N/A</p> <p>4.2.5 How will your research plan consider mutual benefit to the participating community, support capacity building through enhancement of the skills of community personnel, and the recognition of the role of elders and other knowledge holders?</p> <p>N/A</p> <p>4.2.6 Will community representatives have the opportunity to participate in the interpretation of the data and the review of research finding before the completion of any reports or publications? How will final results of the project be shared with the participating community?</p> <p>N/A</p>
4.3	<p>4.3.1 Will the project involve community-based participatory research? GN 4.3</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
4.4	<p>Will deception of any kind be necessary in this project? GN 4.4</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
4.5	<p>Indicate how the participants will be debriefed following their participation (if applicable), and describe how the information on the results of the research will be made available to participants once the study has ended. Debriefing is particularly important if deception has been used. GN 4.5</p>
4.6	<p>Will participants be compensated? GN 4.6</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Please include details:</p> <p>Participants will not be financially compensated, however, for the world cafe process, they will be provided with food and this will be part of the incentive. Also for the interpretation panels, the student and faculty groups will be provided with food, which acts as an incentive.</p>
4.7	<p>4.7.1 Will participants be anonymous in the data gathering phase of the study? (Anonymous means that no link can be established between the participant and the research - no one including the researcher knows who has participated in the research):</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>4.7.2 Will the confidentiality of participants and their data be protected? (Confidentiality means that no link can be established between the collected information and the participant's identity)</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>4.7.3 If yes, are there any limits to confidentiality:</p> <p><input checked="" type="checkbox"/> Limits due to the nature of group activities (e.g. focus groups): the researcher cannot guarantee confidentiality</p> <p><input checked="" type="checkbox"/> Limits due to context: individual participants could be identified because of the nature or size of the sample or because of their relationship with the researcher.</p> <p><input type="checkbox"/> Limits due to selection: procedures for recruiting or selecting participants may compromise the confidentiality of participants (e.g. participants are referred to the study by a person outside the research team)</p> <p><input type="checkbox"/> Other:</p>

PART 5: ESTIMATION OF RISKS AND BENEFITS

5.1	5.1.1 Do you consider this project to be: GN 5.1 <input checked="" type="checkbox"/> Minimal Risk <input type="checkbox"/> Above Minimal Risk
	5.1.2 Indicate if the participants might experience any of the following: Risk of psychological or emotional harm or discomfort (e.g. trauma, anxiety, stress) Minimal or no risk Legal repercussions for participating in the study(e.g. possibility of being sued, charged with criminal activity, disclosure of past or future criminal activities, etc.) No risk Social repercussions (e.g. ostracized, being negatively judged by peers or employer, fired from your job) Minimal or no risk Risk of physical harm or discomfort (e.g. falling, muscle pain, tiredness, weakness, nausea) No risk
	5.1.3 Describe how the risk will be managed (including an explanation as to why an alternative approached could not be used). If appropriate, identify any resources, e.g. physician or counselor, to which participants can be referred. GN 5.1.3 The research topic of motivation is not one that poses a significant risk should participants openly discuss it. The only minimal risk for either social or psychological distress might come from the act of discussing ideas and the fact that some people may disagree. The other minimal risk is that students may feel worried about talking about their teachers and the program in the context of motivation, and any perceived repercussions for this. I will mitigate this by encouraging and reminding participants that there are no right or wrong answers to the discussion questions and that people should at all times be respectful in their interactions. I will mitigate any concerns about repercussions about discussions of teachers or the program by reminding students that all discussions and documentation during the session is confidential and will be made anonymous (de-identified), and that in no way will participation in this research affect their standing in the College of Medicine.
	5.1.4 If above minimal risk, what are the likely benefits of the research to the researcher, participant, the research community and society that would justify asking participants to participate? GN 5.1.4

PART 6: PARTICIPANT RECRUITMENT	
6.1	Describe the participants and the criteria for their inclusion or exclusion. Indicate the number of participants and a brief rationale for the intended number of participants: GN 6.1 Phase I - Questionnaire - I will recruit all medical students in the U of S undergraduate medical program (up to 370 students). For this phase of the study there are no exclusions. Phase II - World Cafe - I plan to invite up to 100 students to participate in this conversational process. I hope to have a balance of students from across all four years of the medical program. This number will allow for breadth of student experiences, yet will be manageable in terms of engagement of all participants.
6.2	6.2.1 Provide a detailed description of the method of recruitment. GN 6.2 Phase I - Students will be invited to participate in this phase via email letter (Appendix A). The letter will include all elements of the formatted invitation to participate in research by the research ethics board, including: an introduction to and purpose of the study, request for participation in the research, risks and benefits, confidentiality and anonymity, right to withdraw, contact information. The letter will also include a link to the online questionnaire. Participants will be informed that completion of the questionnaire will be the acknowledgement of consent to participate. Participants will be emailed using their University of Saskatchewan email address which will be obtained by permission from the College of Medicine associate dean for undergraduate medical education. Phase II - All students in all four years of the MD degree program of the College of Medicine, University of Saskatchewan will be invited to participate in this phase of the study, however, they will be informed that I will only chose 100 students. The selection process, should I receive more than 100 responses to the invitation will be based on "first come, first served" selection. This will help to avoid selection bias. Participants will be invited via email with an attached letter of consent (Appendix B). Participants will be asked to print the letter and bring it to the World Cafe session to have it signed under witness. Extra copies of the consent forms will be available for participants should they require it. 6.2.2 How will prospective participants be identified? All students in the MD degree program in the College of Medicine, University of Saskatchewan are prospective participants. 6.2.3 Who will contact prospective participants? Describe the source of the contact information, how they will be contacted and as applicable, who originally collected the contact information. Ensure any letters of initial contact or other recruitment materials are attached, e.g. advertisements, flyers, telephone script, etc. Greg Malin, Primary researcher, will be contacting the prospective participants. I will contact the College of Medicine to obtain permission to engage the MD program students in this research study. Prospective participants' contact emails will be provided by the College of Medicine. The sample email invitation/attached letter of invitation is attached as appendix A of this application.

6.3	In cases where the research involves special or vulnerable populations, distinct cultural groups, or in cases where the research is above minimal risk, the researcher should describe their experience or training in working with the population. If none of these criteria apply, this section may be omitted. GN 6.3
6.4	<p>Where relevant, please explain any relationship (pre-existing, current or expected to have) between the researcher(s) and the researched (e.g. instructor-student, manager-employee, co-workers, family members/intimate relationships, etc). Please pay special attention to relationships in which there may be a power differential. Describe any safeguards and procedures to prevent possible undue influence, coercion or inducement. GN 6.4</p> <p>I, Greg Malin, primary researcher, am also a teacher in the MD degree program in the College of Medicine. I teach extensively in the first year of the program, and am also the Faculty administrative chair of the first year courses in the MD Program. Therefore, a power differential exists. All participants will be made aware of the risks and benefits of the study. Participants will also know that participation is completely voluntary and should they chose to withdraw their consent at any time, it will not affect in anyway their standing in the College of Medicine. For the questionnaire, students will be informed that participation will be anonymous, therefore, I will not know if they completed the questionnaire and I will not be asking for specific identifying information. At the World Cafe, I will have a third party representative who is not known to the students and who has no power differential with the students to collect and witness the consent to participate, to avoid any undue influence. The same will be the case for the interpretation panel discussion involving the students. Students will be informed that at all times, the information provided (in the questionnaires, the world cafe, interpretation panels) will be kept confidential and will be de-identified to protect anonymity. Any comments attributed to students will be given a generic identifier. During the world cafe, participants will be working in small groups. I will not be directly facilitating these interactions, only facilitating the process for the session.</p>

PART 7: CONSENT PROCESS

	<p>Describe the process that will be used to obtain informed consent. Please note that it is the content of the consent, not the format that is important. If the research involves collection of personally identifiable information from a research participant or extraction of personally identifiable information from an existing database, please describe how consent from the individuals or authorization from the data custodian will be obtained. If there will be no written consent, please provide a rationale for oral or implied consent (e.g., cultural appropriateness, online questionnaire, etc.) and explain how consent will be recorded.</p>
7.1	<p>7.1.1 Describe the consent process. GN 7.1 Phase I - Online Questionnaire - participants will be invited to participate via email letter. This letter is attached (Appendix A) and follows the template of the Research Ethic Board. Participants will not be asked their names however they will be asked gender and age and prior education. This may make some people identifiable, therefore I will present the data in aggregate form. Consent to participate is implied, such that completion of the questionnaire is the consent. Students will be informed of this process. Phase II - A letter of information and consent will be attached to an email invitation to participate. This letter follows the template of the Behavioural research ethics board. This will be a written, signed consent. It will be signed in person at the World Cafe session. It will be witnessed by a third party individual with no direct connection to the students or authority relationship with the students.</p> <p>7.1.2 Who will ask for consent? Phase I - The letter of invitation will indicate that completion of the questionnaire will be the implied consent. Phase II - The participants will bring or be provided with a letter of informed consent and will sign it at the World cafe session. It will be witnessed by a third party person who has no relationship to the students and not in a position of authority.</p> <p>7.1.3 Where, and under what circumstances will consent be obtained? Phase I - implied consent with completion of the questionnaire. Phase II - signed consent at the World Cafe session, not witnessed by the researcher.</p> <p>7.1.4 Describe any situation in which the renewal of consent for this research might be appropriate and how this would take place (e.g. longitudinal studies, multiple data collection events, etc.). N/A</p>
7.2	<p>If any or all of the participants are children and/or are not competent to consent, describe the process by which capacity/competency will be assessed, the proposed alternate source of consent - including any permission/information letter to be provided to the person(s) providing the alternate consent - as well as the assent process for participants. GN 7.2</p> <p>N/A</p>
7.3	<p>Describe your plans for providing project results to the participant? GN 7.3 Phase I - Participants will be given the option as part of the questionnaire to check a box indicating their desire to receive a copy of the project results. If they do not check this box, then this implies that they do not wish to receive the results. Phase II - Participants will be asked at the bottom of the consent form if they would like to receive the results of this phase of the study.</p>

7.4	<p>How and when are participants informed of the right to withdraw? What procedures will be followed for participants who wish to withdraw at any point during the study? <u>GN 7.4</u></p> <p>In all Phases of this study, participants will be informed in the in letter of invitation/consent form that participation in this study is completely voluntary, that they may withdraw at any time without any personal or academic penalty, and that any information that we are able to identify as theirs will be destroyed. The participants will be notified that the questionnaire is completely anonymous not linked to a de-identified code, and therefore we will not be able to isolate it and destroy it. Also, in the world cafe, unless the comments are directly linked to that person's name, it may not be possible to identify specific comments and destroy or omit them.</p>
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PART 8: DATA SECURITY AND STORAGE	
<p>Indicate the procedures you plan to implement to safeguard and store the data. Identify the person who will be assuming responsibility for data storage (University regulations require the researcher or the supervisor, in the case of student research, to securely store the data at the University of Saskatchewan for a minimum of five years upon the completion of the study - (<u>Procedures for Stewardship of Research Records at the University of Saskatchewan 2010.</u>))</p>	
8.1	<p>Who will conduct the data collection? <u>GN 8.1</u></p> <p>Greg Malin, doctoral candidate will be the researcher collecting the data for all phases</p>
8.2	<p>Who will have access to the original data of the study? <u>GN 8.2</u></p> <p>Greg Malin, Doctoral candidate; Dr. Keith Walker, doctoral supervisor; transcriptionist</p>
8.3	<p>How will confidentiality of original data be maintained as well as preserving or destroying data after the research is completed. For all data (e.g. paper records, audio or visual recordings, electronic recordings), indicate the: <u>GN 8.3</u></p>
	<p>8.3.1 Person responsible for data storage:</p> <p>The web-based questionnaire will be hosted on the secure, university survey tool and the students will have access through a secure link to the survey. Data will be stored on a password protected computer and in a locked storage unit. Data will be kept for 5 years and then destroyed as per Ethics protocol. Electronic data files will be deleted from the computer hard drive.</p>
	<p>8.3.2 Data security during transportation from collection site:</p> <p>physical materials being transported from the collection site will be transported immediately to a secure location on campus and stored in a locked cabinet. All electronic materials will be stored on a password protected computer.</p>
	<p>8.3.3 Means and location of storage (e.g. a locked filing cabinet, password protected computer files, encryption):</p> <p>physical materials will be stored in a secure location on campus and stored in a locked cabinet. All electronic materials will be stored on a password protected computer with encrypted storage backup. Consent Forms will be stored separate from data, in a locked cabinet.</p>
	<p>8.3.4 Time duration of storage (Must be > 5 Years):</p> <p>Data will be kept for 5 years and then destroyed as per Ethics protocol</p>
8.4	<p>8.3.5 Final disposition (archive, shredding, electronic file deletion):</p> <p>All physical materials will be shredded and electronic files will be deleted from the hard drive</p>
	<p>Indicate how the data collected is intended to be used (thesis, journal articles, conference presentation, media, etc). <u>GN 8.4</u></p> <p>Material will be reported in a dissertation, will be written for publication and presented at conferences.</p>

PART 9: Declaration by Principal Investigator (or Supervisor for student projects)

Project Title _____

- I confirm that the information provided in this application is complete and correct.
- I accept responsibility for the ethical conduct of this project and for the protection of the rights and welfare of the human participants who are directly or indirectly involved in this project.
- I will comply with all policies and guidelines of the University and Health Region/affiliated institutions where this project will be conducted, as well as with all applicable federal and provincial laws regarding the protection of human participants in research.
- I will ensure that project personnel are qualified, appropriately trained and will adhere to the provisions of the REB-approved application.
- I certify that any significant changes to the project, including the proposed method, consent process or recruitment procedures, will be reported to the Research Ethics Board for consideration in advance of its implementation.
- I certify that a status report will be submitted to the Research Ethics Board for consideration within one month of the current expiry date each year the project remains open, and upon project completion.
- If personal health information is requested, I assure that it is the minimum necessary to meet the research objective and will not be reused or disclosed to any parties other than those described in the REB-approved application, except as required by law.
- I confirm that adequate resources to protect participants (i.e., personnel, funding, time, equipment and space) are in place.
- I understand that if the contract or grant related to this research project is being reviewed by the University or Health Region, a copy of the ethics application inclusive of the consent document(s), may be forwarded to the person responsible for the review of the contract or grant.
- I understand that if the project involves Health Region resources or facilities, a copy of the ethics application may be forwarded to the Health Region research coordinator to facilitate operational approval.

Signature of Principal Investigator and/or
Supervisor

Printed Name of Principal Investigator and/or
Supervisor

Date (MM/DD/YY)

Signature of Student Investigator

Printed Name of Student Investigator

Date (MM/DD/YY)

Department Head (UofS and RQHR only) : The signature/approval of the Department/Administrative Unit acknowledges that he/ she is aware of and supports the research activity described in the proposal.

Signature of Department Head

Printed Name of Department Head

Date (MM/DD/YY)

SECTION 10: APPENDICES GN 10

Document	Included?	Description
Recruit Material(s)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A	
Letter (s) of Initial Contact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	
Consent Form(s)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	
Assent Form(s)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A	
Research Tool(s) (e.g. Questionnaires, focus group guides, interview scripts, etc.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	
Transcript Release Form(s)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	
RQHR Operational/Departmental Approval Form	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A	
Other (please specify): <div style="border: 1px solid black; height: 15px; width: 100%;"></div>	<input type="checkbox"/> Yes <input type="checkbox"/> N/A	

Invitation to Participate in Research Study – Phase I – Student Survey

Project Title: Self-Determination in Medical School: Medical Students' Perspectives

Researcher: Greg Malin, Assistant Professor, Department of Family Medicine, University of Saskatchewan, 306-655-4208, greg.malin@usask.ca

Supervisor: Dr. Keith Walker, Department of Educational Administration, 306-966-7623, keith.walker@usask.ca.

Introduction and Purpose of the Research:

Dear U of S Medical Students,

I am currently working on my PhD. I am at the stage where I am collecting data. The central purpose of my research is to explore medical students' perspectives of their self-determination in medical school. I am studying this from a specific theoretical perspective known as Self-Determination Theory. This motivational theory explains that people are motivated by the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. The more these needs are met, the more intrinsically motivated individuals will be.

Because motivation is dependent on the individual learner, I am interested in your perspectives (as students) about how your autonomy, competence, and relatedness is supported or hindered during medical school. Exploring these elements from your perspective will help to target more effective teaching approaches to support self-determination.

My research will occur in two phases and each phase depends on input from students from across all years of the undergraduate medical education curriculum: Phase I – involves collecting information about motivation via questionnaire; and Phase II – involves collecting information about student perspectives of self-determination via a large group forum.

The information below is specifically to invite all of you to engage in Phase I (questionnaire) of this study, please read through it carefully so you understand your role and rights as a research participant. The link to this questionnaire is at the bottom of this invitation.

Procedures:

I am inviting all medical students in the College of Medicine, University of Saskatchewan to complete a questionnaire to explore some basic information about your motivation. The questionnaire will take approximately 20 minutes to complete. It has four parts. Part I - basic demographic information. Part II – The General Causality Orientation Scale, asking about your motivational orientation. Part III – Learning Climate Questionnaire – asking about your motivational experiences with your teachers. Part IV – Learning Self-Regulation Questionnaire – asking about reasons why you participate in class.

Please feel free to ask any questions regarding the procedures and goals of the study or your role.

Funded by: *This research project is funded by a University of Saskatchewan New Faculty Start-up grant.*

Potential Risks:

There are no known or anticipated risks to you by participating in this research

Potential Benefits:

The potential benefit to you as a participant is that you will be contributing to better understanding of the personal factors that impact medical students' motivation to learn. With this information, faculty teachers will be better informed about student factors that contribute to student motivation. Consequently, teachers will be able to use a more informed approach to effectively motivate learners. Other indirect potential benefits include, contributing the theoretical underpinnings of Self-Determination Theory.

Confidentiality

Participation in this research study is voluntary. I will take the following steps to protect your anonymity and confidentiality. I will not know whether or not you have completed the questionnaire and will not be tracking participants, so your decision to participate cannot have any impact on your standing in the College of Medicine. Although the data from this research project will be published and presented at conferences, the data will be reported in aggregate form, so that it will not be possible to identify individuals.

All information collected and project results will be securely stored by my doctoral research supervisor for a minimum of five years post publication. After this time all hard copy materials will be destroyed and electronic materials deleted.

Follow up:

To obtain results from the study, please contact Greg Malin, greg.malin@usask.ca.

Questions or Concerns:

If you any questions about this research project, please feel free to contact either Greg Malin or Dr. Keith Walker, using the information at the top of page 1

This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975.

Consent:

Completion of the online questionnaire will constitute consent to participate and permission for the researcher to use the data gathered in the manner described.

To complete the questionnaire, please click the link below, which will take you to the secure online tool:

<http://fluidsurveys.usask.ca/surveys/pT4tKgG28KPXHmSVt297DTWF9sWGN/medical-student-learner-motivation-inventory/>

Participant Consent Form – Phase II – World Cafe

Project Title: Self-Determination in Medical School: Medical Students' Perspectives

Researcher: Greg Malin, Assistant Professor, Department of Family Medicine, University of Saskatchewan, 306-655-4208, greg.malin@usask.ca

Supervisor: Dr. Keith Walker, Department of Educational Administration, 306-966-7623, keith.walker@usask.ca.

Purpose and Objective of the Research:

The central purpose of this research is to explore medical students' perspectives about their motivation in medical school. I am studying this from a specific theoretical perspective known as Self-Determination Theory. This theory explains that people are motivated by the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. The more these needs are met, the more intrinsically motivated individuals will be. Because motivation is dependent on the individual learner, I am interested in your perspectives (as students) of how your autonomy, competence, and relatedness have been supported or hindered during medical school. Exploring these elements from your perspective will help to target more effective teaching approaches to support higher quality motivation

Procedures:

I am inviting you to participate in a World Café conversation event on Wednesday April 23rd, from 5:00pm – 9:00pm in the Health Sciences D-Wing Atrium. This research method is a casual and engaging process that involves gathering up to 100 participants together to work in small groups to engage in conversations about your perspectives of autonomy, competence and relatedness (i.e. self-determination) during medical school. (These terms will be explained in an introduction to the session). The World Café process is a unique approach to sharing knowledge, expressing ideas, and generating innovative ways to address important issues. During this event, there will be nutrition breaks (refreshments provided), and dinner will be provided.

Please feel free to ask any questions regarding the procedures and goals of the study or your role.

Funded by: *This research is not funded*

Potential Risks:

There are no known or anticipated risks to you by participating in this research

Potential Benefits:

The potential benefit to you as a participant is that you will be contributing to better understanding of the personal factors that impact medical students' self-determined motivation.

This information will enable faculty teachers to approach teaching with a more targeted and informed approach to support more effective learner motivation. Other indirect potential benefits include, contributing the theoretical underpinnings of Self-Determination Theory.

Confidentiality and Right to Withdraw

Participation in this research study is voluntary. You are free to withdraw from the study at any time and it will not affect your academic status or access to any services. Should you decide to withdraw, data collected that can be associated to you will be destroyed at that time. Given the nature of the data collection, it may not be possible to identify specific quotes that you made. Your right to withdraw data from the study will apply until the data has been pooled. After this it is possible that some form of research dissemination will have already occurred and it may not be possible to withdraw your data.

Given the face-to-face nature of the World Café process I cannot ensure complete anonymity. However, I will take the following steps to ensure appropriate anonymity and confidentiality. The data from this research project will be published in my doctoral dissertation, journal articles, and presented at conferences; however, your identity will be kept confidential. Information will be presented predominantly in aggregate form. However, I may report direct quotations from the World Café process, in which case they will be anonymous, and all personal identifying information will be removed from my report. I will not be recording names with the written comments, which will confer a degree of anonymity.

I will undertake to safeguard the confidentiality of the discussion, but cannot guarantee that other members of the group will do so. Please respect the confidentiality of the other members of the group by not disclosing the contents of this discussion outside the World Café session, and be aware that others may not respect your confidentiality.

All information collected and project results will be securely stored by my doctoral research supervisor for a minimum of five years post publication. After this time all hard copy materials will be destroyed and electronic materials deleted.

Follow up:

To obtain results from the study, please contact Greg Malin, greg.malin@usask.ca.

Questions or Concerns:

If you have any questions about this research project, please feel free to contact either Greg Malin or Dr. Keith Walker, using the information at the top of page 1

This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975.

Consent:

My signature below indicates that I have read and understand the description provided; I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

Name of Participant

Signature

Date

Researcher's Signature

Date

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Project Title: Self-Determination in Medical School: Medical Students' Perspectives

Researcher: Greg Malin, Assistant Professor, Department of Family Medicine, University of Saskatchewan, 306-655-4208, greg.malin@usask.ca

Supervisor: Dr. Keith Walker, Department of Educational Administration, 306-966-7623, keith.walker@usask.ca.

Purpose and Objective of the Research:

The central purpose of this research is to explore medical students' perspectives about their motivation in medical school. I am studying this from a specific theoretical perspective known as Self-Determination Theory. This theory explains that people are motivated by the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. The more these needs are met, the more intrinsically motivated individuals will be. Because motivation is dependent on the individual learner, I am interested in your perspectives (as students) of how your autonomy, competence, and relatedness have been supported or hindered during medical school. Exploring these elements from your perspective will help to target more effective teaching approaches to support higher quality motivation

Procedures:

I am inviting you to participate in a World Café conversation event on Thursday April 24th, from 5:00pm – 9:00pm at the Regina General Hospital. This research method is a casual and engaging process that involves gathering up to 100 participants together to work in small groups to engage in conversations about your perspectives of autonomy, competence and relatedness (i.e. self-determination) during medical school. (These terms will be explained in an introduction to the session). The World Café process is a unique approach to sharing knowledge, expressing ideas, and generating innovative ways to address important issues. During this event, there will be nutrition breaks (refreshments provided), and dinner will be provided.

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